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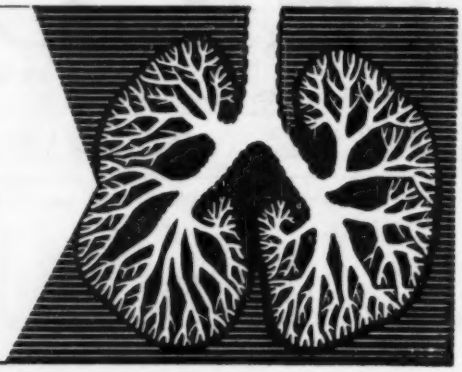

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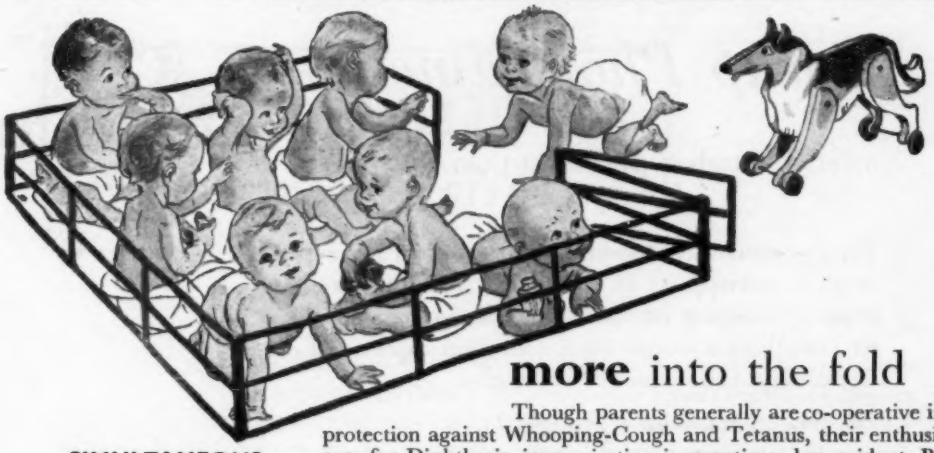

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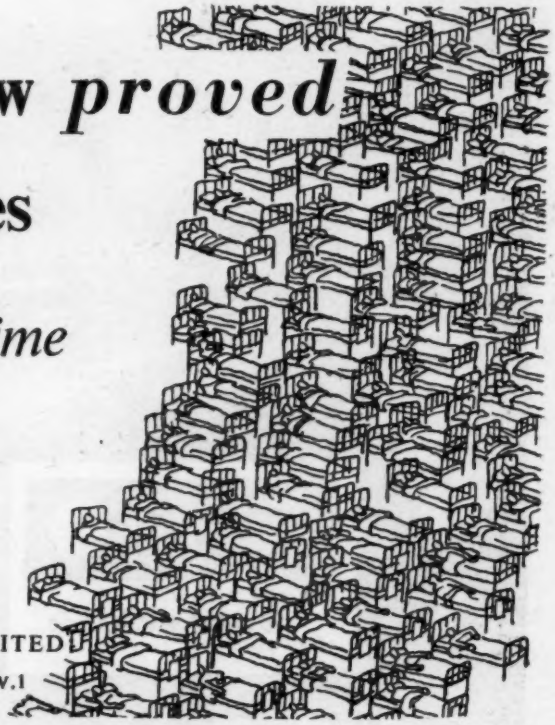

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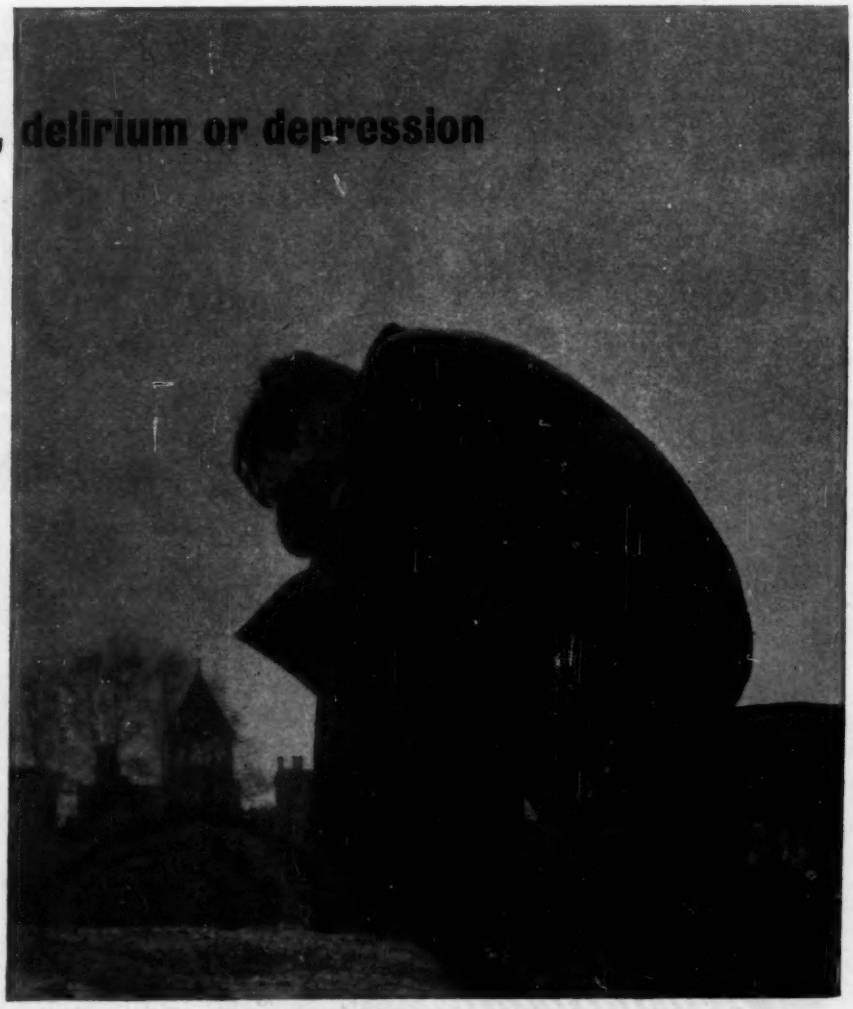

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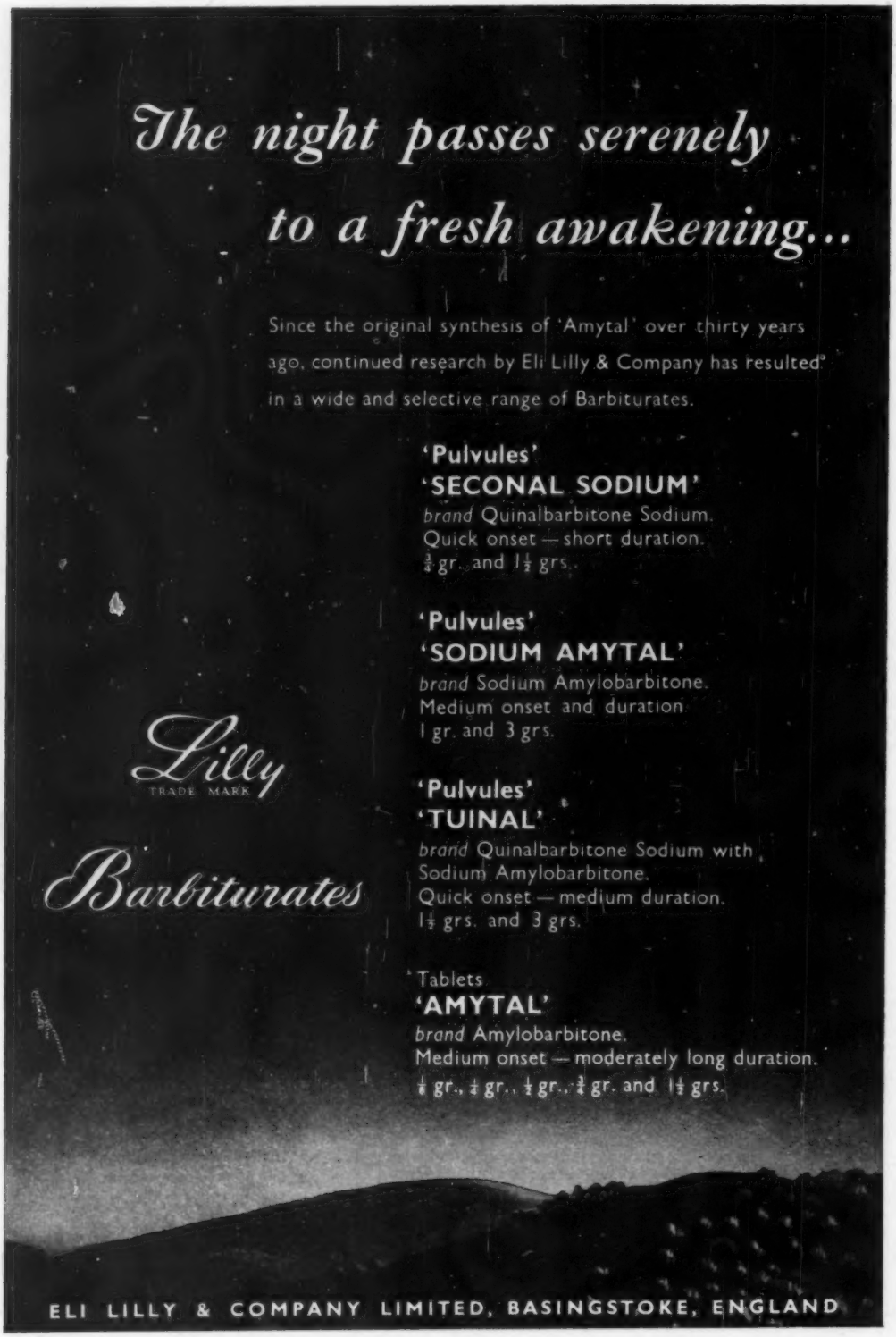
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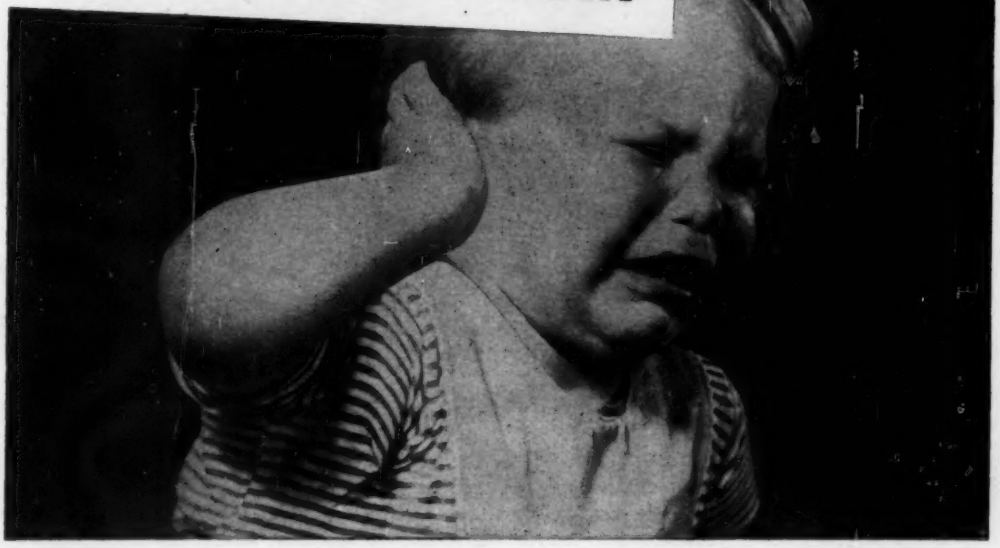

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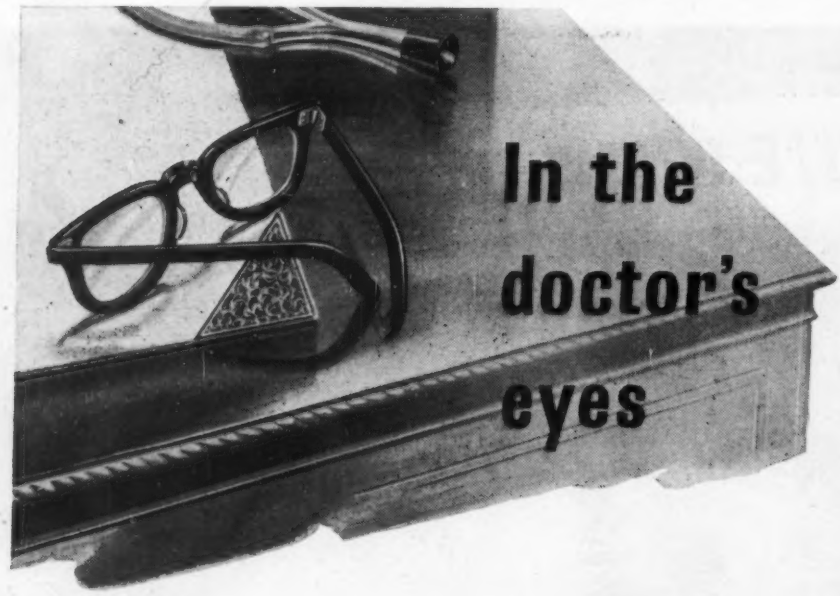

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CAPSULES · TABLETS · SOLUBLE TABLETS · EAR SOLUTION · INTRAMUSCULAR · INTRAVENOUS OINTMENT 3% · OPHTHALMIC OINTMENT 1% OPHTHALMIC STERILIZED · ORAL SUSPENSION PEDIATRIC DROPS · SPERSOIDS* Dispersible Powder SYRUP · TROCHES

ACHROMYCIN
a true broad-spectrum antibiotic

*Registered Trade Mark

Lederle

LEDERLE LABORATORIES DIVISION
Cyanamid Products Ltd. BUSH HOUSE, LONDON, W.C.2 TEMPLE BAR 5411

Correct vitamin balance for all ages

From the youngest to the oldest the routine administration of ABIDEC* ensures an adequate intake of vitamins in well-balanced proportions.

For infants and children Abidec **DROPS** are the ideal supplementary multivitamin treatment. For adults Abidec **CAPSULES** are invaluable in correcting suspected deficiencies due to bad dietary habits.

ABIDEC

**Trade Mark*

Abidec Drops are easily administered to infants and children, in food, a single daily dose being adequate. For adults, adequate intake is obtained with ONE *Abidec Capsule Daily.*

Parke, Davis & Company, Limited (Inc. U.S.A.) Hounslow, Middlesex. Tel: Hounslow 2361

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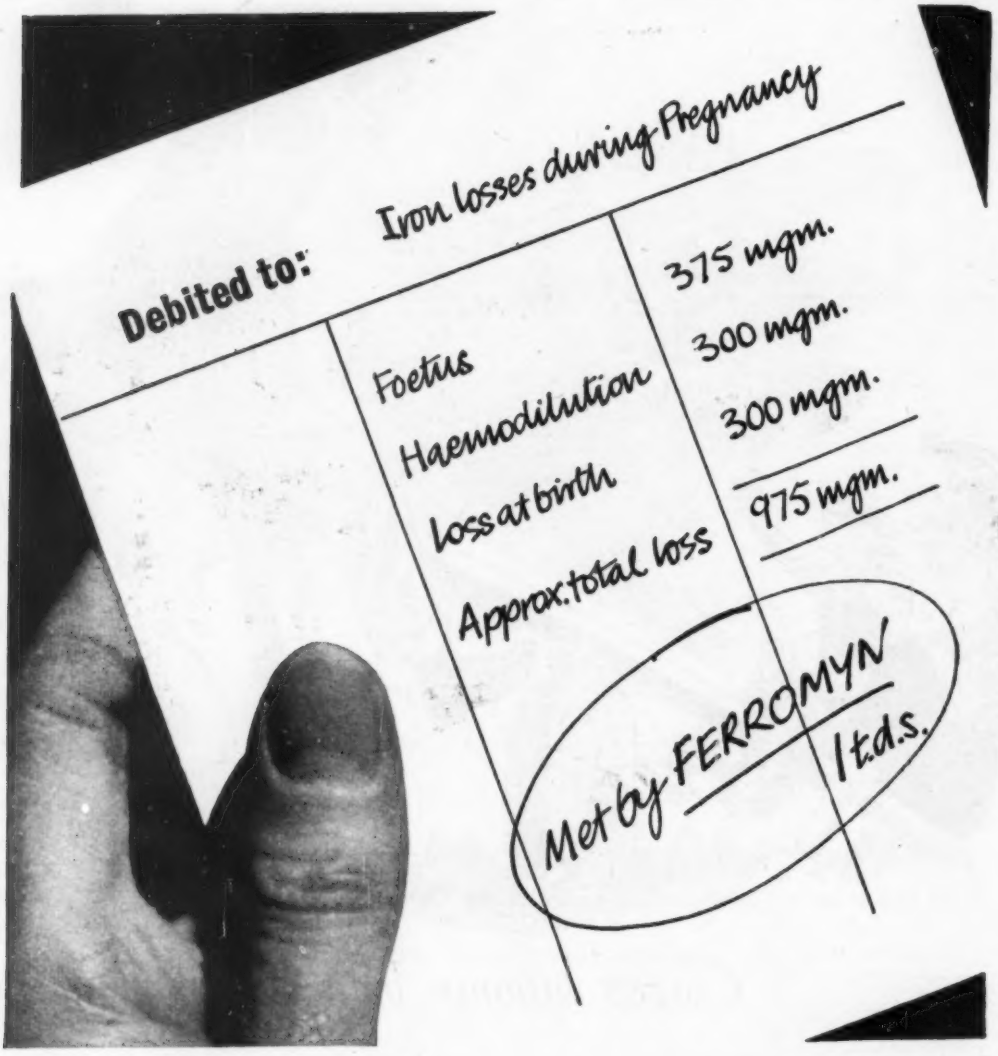


PREGNANCY: meeting the inevitable iron deficiency

Progressive inroads are made on the maternal iron stores during pregnancy. The demand made is greatly increased during the third trimester, and there is little doubt that the exposition of a suitable form of iron is of definite clinical value. FERROMYN meets these important demands because it affords maximum bivalent iron from a minimum of ferrous salt, does not cause alimentary upset, has a high utilisation factor and will maintain a satisfactory haemoglobin level throughout term.

FERROMYN is supplied in:

ELIXIR FERROMYN Each teaspoonful contains: *Ferrous Succinate 150 mgm.*

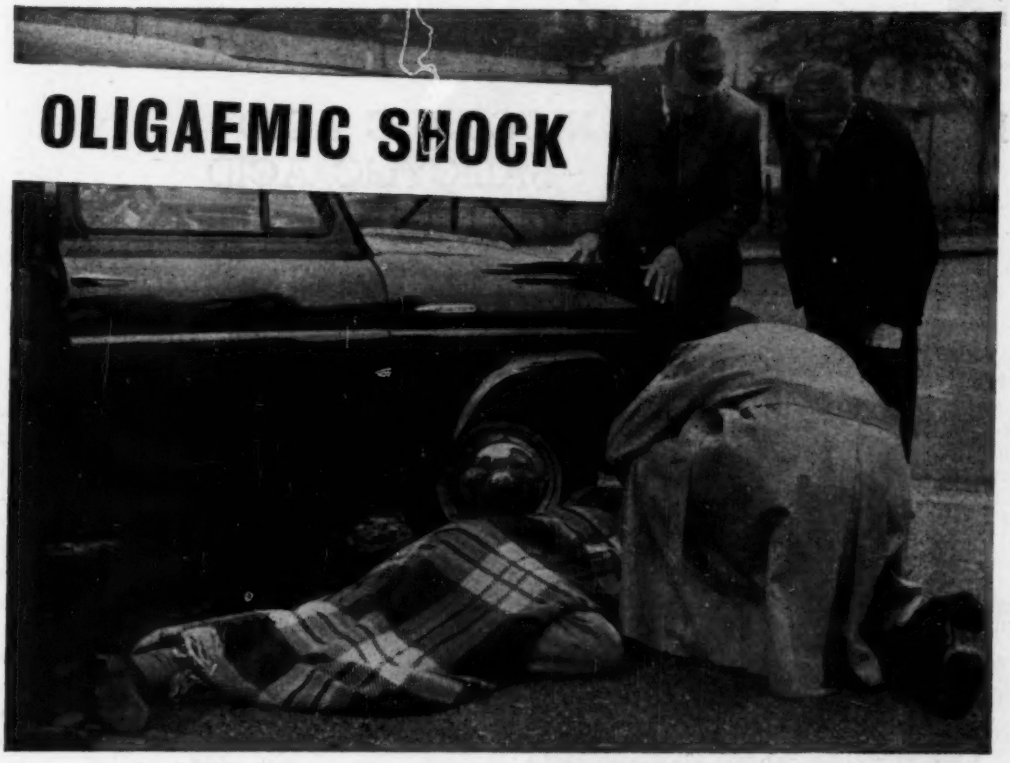
ELIXIR FERROMYN 'B' Each teaspoonful contains: *Ferrous Succinate 150 mgm. Aneurine Hydrochloride 1 mgm. Riboflavin 1 mgm. Nicotinamide 10 mgm.*

FERROMYN

CALMIC LIMITED, CREWE. *Phone CREWE 3251-5* **LONDON:** *2 Mansfield St., W.1. Phone LANgham 8038-9*

. . . leadership in oral-iron therapy

F2



THIS MAN is in shock. His blood pressure must be raised swiftly and maintained, now, during any operation which may follow, and in the post-operative period.

A CLEAR CASE FOR DEXTRAVEN, the established clinical dextran solution.

DEXTRAVEN raises the blood pressure swiftly and surely, and stays in the circulation in significant concentration during the critical 24 hours.

DEXTRAVEN can be given immediately by intravenous infusion. It is stable indefinitely under all climatic conditions—no special storage precautions are necessary. DEXTRAVEN is approved by the Ministry of Health. Fully descriptive literature is available and a Technical Information Service is always at your disposal.

A clear case for DEXTRAVEN

TRADE MARK

BENGER LABORATORIES LIMITED · HOLMES CHAPEL · CHESHIRE

A BENGER PRODUCT

Transvasin

brings the esters of NICOTINIC ACID SALICYLIC ACID p-AMINOBENZOIC ACID to the focal point of soft-tissue rheumatism

The esters in Transvasin, a new preparation developed by Hamol S.A., our Swiss associates, readily pass the skin barrier in therapeutic quantities and enable an effective concentration of the drugs to be built up where they are needed.* Transvasin not only induces vasodilation of the skin with a superficial erythema, but also brings about a deep hyperaemia of the underlying tissues. It is non-irritant, and can be safely used on delicate skins.

It is now being widely prescribed, with successful clinical results. Since a very small quantity is sufficient for each application, the cost of treatment is extremely low.

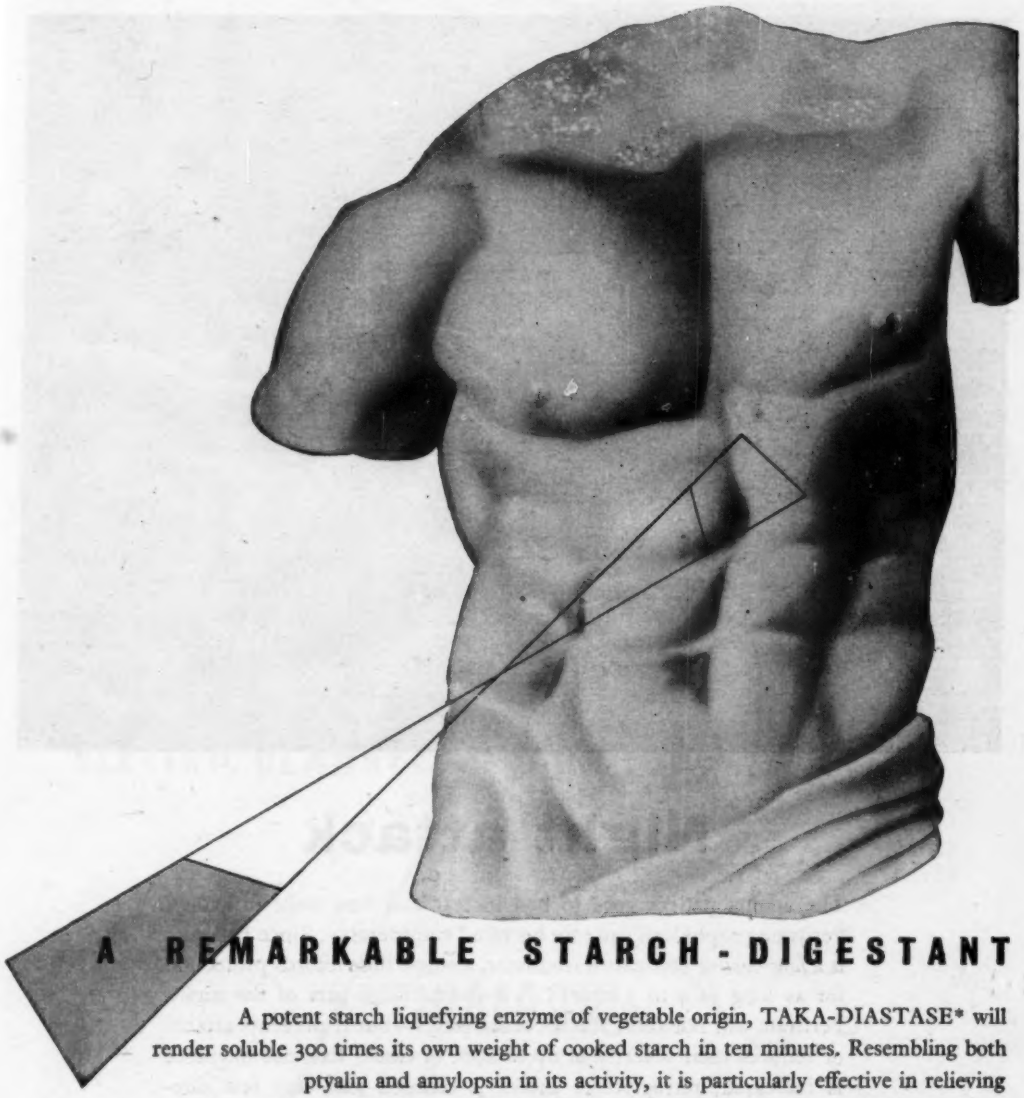
Salicylic acid tetrahydrofurfuryl-ester	14%
Nicotinic acid ethyl-ester	2%
Nicotinic acid n-hexyl-ester	2%
p-Aminobenzoic acid ethyl-ester	2%
Water-miscible cream base ad	100%

* *Therapeutische Umschau VIII*, 1, 52, 20, 143

Transvasin is available in 1 oz. tubes, basic price 2/6 plus 9d P.T., and is not advertised to the public. Samples and literature will be gladly sent on application.

LLOYD-HAMOL LTD., 11 Waterloo Place, London, S.W.1 WHItehall 8654/5/6

Transvasin is the registered trade mark of Lloyd-Hamol Ltd.



A REMARKABLE STARCH-DIGESTANT

A potent starch liquefying enzyme of vegetable origin, TAKA-DIASTASE* will render soluble 300 times its own weight of cooked starch in ten minutes. Resembling both ptyalin and amylopsin in its activity, it is particularly effective in relieving amylaceous dyspepsia, gastric discomfort, and as an aid to nutrition.

TAKA-DIASTASE

Starch-liquefying enzyme

TAKA-DIASTASE SEDATIVE ELIXIR *(No. 198)*
A combination of Taka-Diastase, bismuth and nux vomica for dyspepsia accompanied by nausea or pain.

TAKAZYMA
Taka-Diastase, with insoluble carbonates. Gives 3-fold relief of (1) hyperacidity (2) undigested starch (3) irritation of gastric mucosa.
Powder in jars of 2 ozs. and tins of 1 lb.
Lozenges in bottles of 30 and 100.

*Trade Mark

PARKE, DAVIS & COMPANY, LIMITED *(Inc. U.S.A.)* HOUNSLOW, MIDDLESEX. Tel: Hounslow 2361
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Night attack

The angina patient goes to bed in fear and may wake in agony. Peritrate prophylaxis can ease his mind considerably. Since Peritrate is a *long-lasting* coronary vasodilator, a single dose affords protection for as long as 4 to 5 hours . . . a considerable part of the night. Peritrate will not abort attacks completely — but it prevents attacks or reduces their severity in up to 80% of cases. Exercise tolerance is increased, nitroglycerin intake is reduced and very few side-effects occur.

Active principles: Pentaerythritol tetranitrate 10 mg.

Packing: Bottles of 50 tablets and packs of 500 supplied to chemists for dispensing only.

PERITRATE WITH PHENOBARBITONE. (Peritrate 10 mg. with Phenobarbitone 15 mg.) is also available, similarly packed.

Peritrate

Trade Mark

WILLIAM R. WARNER & CO. LTD., POWER ROAD, LONDON, W.4.

The ELECTRIC BLANKET in the TUBE

FINALGON Regd. Trade Mark

OINTMENT

Produces a glowing feeling of warmth which lasts for hours and relieves rheumatic pain

Tube of 20 g.

COMPOSITION :
Nonylic acid vanillylamide 0.4% and Nicotinic acid-β-butoxyethyl ester 2.5% in a suitable ointment base

5073/E

LEWIS LABORATORIES LTD., LEEDS 9

19

A new capillary haemostatic

ADRENOXYL

for medical and surgical conditions

Clinically proven to reduce bleeding-time without effect on coagulation or blood pressure, and to have no undesirable side effects

ADRENOXYL, a product of original research, reduces the mean bleeding-time by decreasing the permeability and increasing the contractility and resistance of the capillaries. Its effectiveness in diminishing blood loss has been demonstrated by clinical studies.

ADRENOXYL has no effect on coagulation. It neither increases nor decreases blood pressure.

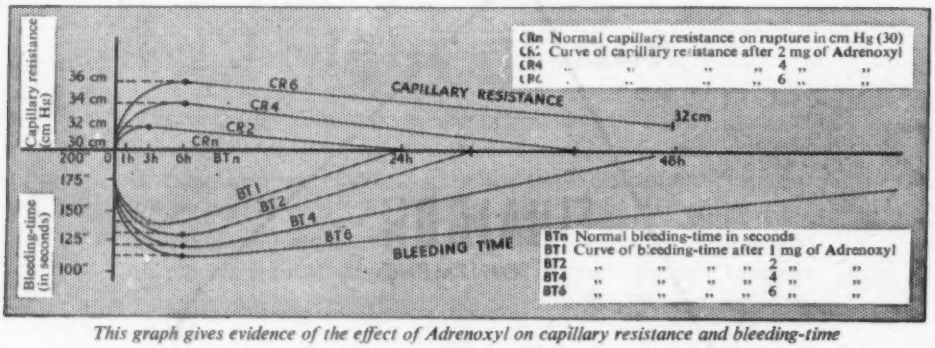
ADRENOXYL is non-toxic, and there are no contra-indications to its use.

ADRENOXYL is indicated in the preventive and curative treatment of all types of capillary bleeding.

ADRENOXYL has been successfully used to diminish capillary bleeding in a wide range of surgical operations, and has proved particularly useful in ear, nose, and throat surgery, ophthalmic surgery, thoracic surgery, gastro-intestinal surgery, plastic surgery and urogenital surgery. It has also been used successfully in many medical conditions associated with capillary haemorrhage or where capillary fragility is a feature.

ADRENOXYL may be administered by mouth or by subcutaneous or intramuscular injection. The oral form is for routine treatment, though when rapid action is desired the intramuscular route is recommended.

ADRENOXYL is now available in boxes of 6 or 50 ampoules: tubes of 25 tablets or bottles of 500 tablets.



This graph gives evidence of the effect of Adrenoxyl on capillary resistance and bleeding-time

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Hémostase on chirurgie plastique, emploi de la monosemicarbazone de l'adrénochrome.
Rev. L.O.R. 1948, 380.

Literature and samples on request.

HORLICKS LIMITED
Pharmaceutical Division, Slough, Bucks.

DISCRIMINATE use of nasal decongestants for the symptomatic relief of catarrhal conditions of the upper respiratory tract is now firmly established in modern therapy. The choice of preparation is important—the aim being to combine maximal efficiency with safety. FENOX has been formulated to meet the basic requirements of the ideal nasal decongestant.

FENOX
NASAL DROPS

Basic N.H.S. Price ½ fl. oz. Dropper Bottle 1/8d.

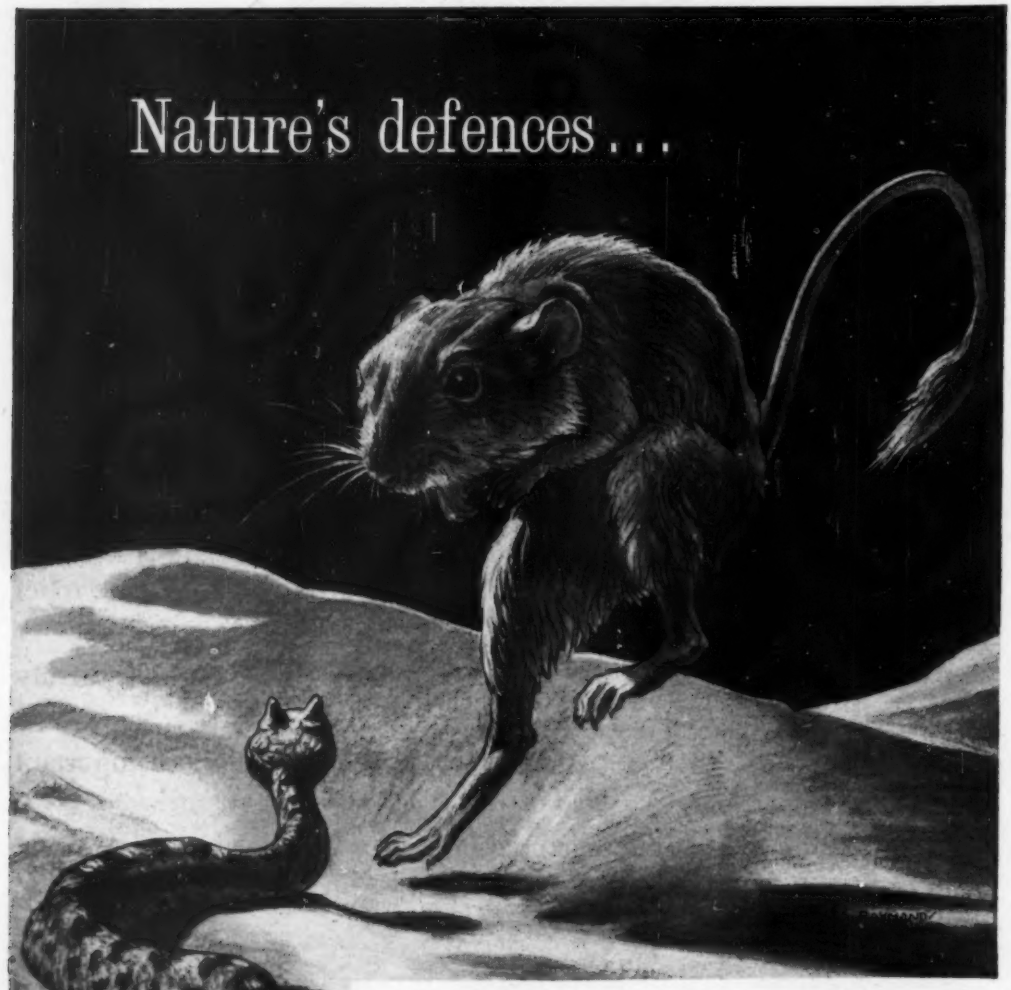
FORMULA: *Phenylephrin Hydrochlor.* 0.25%
Naphazolin. nit. 0.025% *Chlorbutol* 0.5%

Boots

Patients' directions pads and detailed literature on request

BOOTS PURE DRUG COMPANY LIMITED NOTTINGHAM, ENGLAND

Nature's defences...



...for animals

The Kangaroo Rat, appropriately named in view of its long hind legs and strong tail, is well endowed with Nature's predictable defences. It has sharp eyes, keen ears, a sensitive nose and can bounce along swiftly in jumps twice its own length or zig-zag and turn sharply on its tail. When attacked in the desert by its enemy —the king snake—the kangaroo rat turns about and defends itself effectively by kicking sand into the serpent's lidless eyes.

...for humans

Nature also provides predictable defences for man. In one of these —TERRAMYCIN, a broad-spectrum antibiotic derived from a tiny wrinkled mould found in the soil—she has provided man's most predictable means of defence against microbial attack. Effective in more than 100 infections, TERRAMYCIN with its rapid anti-microbial action and fewer side effects ensures a more positive defence against more organisms than any other anti-infective agent.

Terramycin*

BRAND OF OXYTETRACYCLINE

TERRAMYCIN* SF* (combined Terramycin and specific nutrients) is available to fortify the patient and, at the same time, to fight the infection.

Pfizer WORLD'S LARGEST PRODUCER OF ANTIBIOTICS

PFIZER LTD., FOLKESTONE, KENT

* *Trade Mark Chas. Pfizer & Co. Inc.*

" Precisely, Mr. Baxter. . .

. . . that puts the matter in a nutshell. One *can* say that I.Z.S. is the insulin of the moment . . . particularly for a new diabetic. The thing to remember, gentlemen, is that I.Z.S. seems to have it both ways, so to speak. It gives you a rapid initial response, yet the one injection will usually control the blood sugar level adequately for up to 24 hours. This, as you will find, is a great advantage to your patient. There are, of course, a few patients who benefit more from a modification of the standard I.Z.S. In such cases, you can vary the proportions of the different forms of I.Z.S. in the injection. If you consider that quicker initial action is desirable, the patient can use more I.Z.S. amorphous in his syringe, or alternatively, add more I.Z.S. crystalline to prolong the effect of the injection. Any other questions ? "

I.Z.S. A.B. Vials of 10 c.c. 40 or 80 units per c.c.

I.Z.S. (Amorphous) A.B. Vials of 10 c.c. 40 units per c.c.

I.Z.S. (Crystalline) A.B. Vials of 10 c.c. 40 units per c.c.

Insulin Zinc Suspension A.B.

A B TRADE MARK

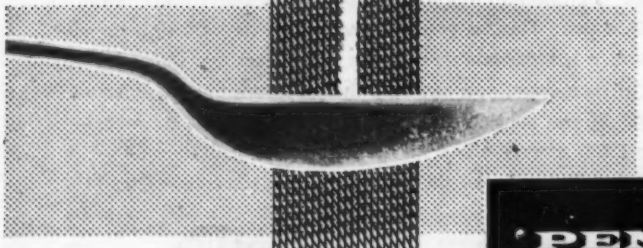
Joint Licensees and Manufacturers :

ALLEN & HANBURYS LTD LONDON E2 • THE BRITISH DRUG HOUSES LTD LONDON N1

for convenient oral penicillin therapy

'PENAVLON' LIQUID presents soluble crystalline penicillin G in a stable, palatable preparation, ready for use. Each c.c. contains 60,000 units. The penicillin is finely suspended in 'Penavlon' Liquid so as to ensure uniform dosage.

'PENAVLON' LIQUID is eminently suitable for oral penicillin therapy in patients of all ages and it is readily accepted by infants and children.



'PENAVLON'

LIQUID

PENICILLIN ORAL SUSPENSION

Issued in bottles of 50 c.c.

Basic price under N.H.S. 7/- per 50 c.c. bottle.

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IMPERIAL CHEMICAL (PHARMACEUTICALS) LIMITED
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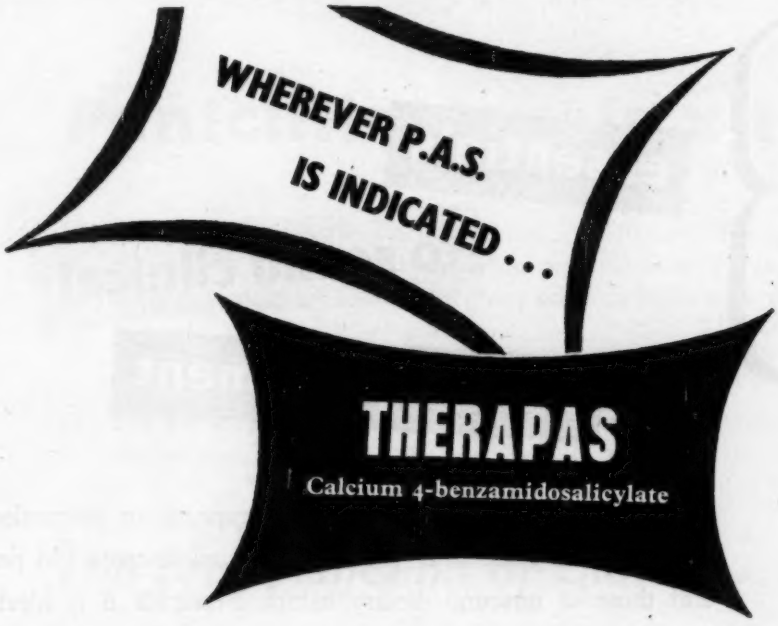


An accepted combination in the chemotherapy of tuberculosis is P.A.S. together with isoniazid or streptomycin. Either combination, according to a recent Medical Research Council report (1), is very effective and helps to delay the appearance of resistant strains. P.A.S. has, however, the disadvantage of being poorly tolerated; many patients would welcome an alternative. **Therapas,** first synthesized in our laboratories in 1951, was introduced as an alternative to P.A.S. to which it is converted in the body (2). It has now been shown that it not only delays the emergence of strains resistant to isoniazid or streptomycin, when used together with either of these drugs, but has a therapeutic action *per se.* It gives satisfactory clinical and radiological results in the treatment of pulmonary tuberculosis (3, 4) and of genito-urinary tuberculosis(5). Since it has a sweet, not unpleasant, taste it is usually much preferred by the patient.

1 Report to M.R.C. of Tuberculosis Chemotherapy Trials Committee, *Brit. Med. J.*, 1955, 1, 435.

2 *J. Pharmacy & Pharmacol.*, 1953, 5, 849.

3 *Schweiz. med. Wschr.* 1955, **85**, 222.

4 *Tubercle* 1955, 36, 209.

5 *Lancet*, 1955, 1, 116.

dosage

Therapas may be administered in daily doses of 14 G:

availability

Individual packets of 3.5 G. in boxes of 100 packets.
1 G. cachets in containers of 100 and 500.
Bulk Therapas powder in containers of 100 G. and 500 G.

S&N *Further information and prices from*
Smith & Nephew Ltd.,
Welwyn Garden City, Herts.

to summarize

a
THERAPAS is just as effective as P.A.S., if not more so.

b
It is better tolerated.

c
And it can be used wherever P.A.S. is indicated.

3 essentials to sound clinical IRON replacement

In post-haemorrhagic states; as a therapeutic or precautionary measure during and after pregnancy; in adolescents, old people and those of unsound dietary habits, Ferraplex B is ideal for iron-deficiency anaemias of all kinds.

1 It contains adequate FERROUS iron in a form yielding rapidly increased and sustained haemoglobin levels.

2 The supplements it contains—copper, complete vitamin B complex, ascorbic acid—ensure that not only the additional iron but that present in the diet is fully utilised for haemopoiesis.

3 It is extremely well tolerated by patients of all ages, even those who usually react unfavourably to unmodified doses of iron salts.

COMPOSITION

The average daily dose of six FERRAPLEX B tablets contains:

FERRI SULPH. EXSICC., B.P. . . . . 1 gramme
COPPER CARBONATE . . . . . 2 mg.
ASCORBIC ACID (Vitamin C) . . . . . 50 mg.

NATURAL VITAMIN B COMPLEX EXTRACT: 2 grammes *prepared from brewers' yeast and including*
Aneurine hydrochloride (Vitamin B_1) . . . 3 mg.
Riboflavine (Vitamin B_2) . . . . . 6 mg.
Nicotinamide . . . . . 30 mg.
and all the other naturally occurring factors of the vitamin B complex.

Bottles of 50 tablets : 5/3d (Retail) ; 250 tablets 15/6d (Basic N.H.S. price).

FERRAPLEX B

C. L. BENCARD LTD · PARK ROYAL · LONDON · N.W.10.

* Penicillin levels x 10!

'Benemid' increases penicillin plasma levels by up to 10 times. The combination of the new drug 'Benemid' with potassium penicillin G in 'PENBENEMID' provides a *convenient oral dosage form* giving penicillin levels which are

(1) **COMPARABLE** to those obtained with intramuscular penicillin and

(2) **SUSTAINED** much longer than is the case with other oral penicillin preparations

The oral penicillin of choice . . .

* 'Penbenemid'-250

TABLETS—'BENEMID' WITH POTASSIUM PENICILLIN G

'Penbenemid'-250 Tablets have an increased penicillin content. The inclusion of 'Benemid' ensures sustained blood levels hitherto unobtainable by the oral route.

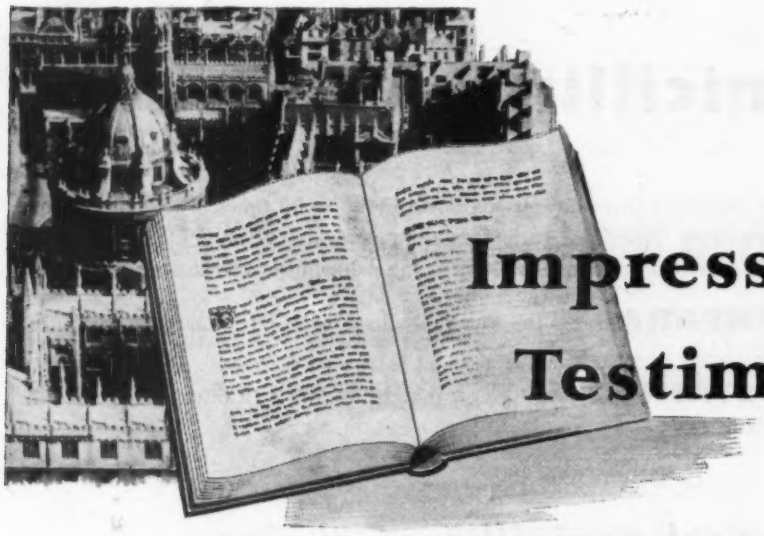
Each tablet contains 250,000 units Potassium Penicillin G with 0.25 G. 'Benemid'. Supplied in bottles of 12 tablets.

* The ORAL penicillin preparation giving sustained blood levels comparable to those obtainable with intramuscular penicillin

Literature gladly sent on request.

MERCK-SHARP & DOHME LIMITED., HODDESDON, HERTS.

'Benemid' and 'Penbenemid' are Registered Trade Marks.



Impressive Testimony

In all the great centres of medical learning throughout the world, ample evidence exists that bears testimony to man's knowledge of the anaemias. Understandably, however, the practising physician is most impressed by therapeutic results: *and in this respect, clinical experience shows that there is abundant and impressive testimony to the success of the Lederle range of anti-anaemia products . . .*

PERIHEMIN*

Iron — B_{12} — C — Folic Acid — mach — Liver Fraction — Purified Intrinsic Factor Concentrate

Provides all the principal haematopoietic factors in a single capsule; treatment of the common anaemias is thus reduced to remarkably simple terms. Each capsule contains: Ferr. Sulph. Exsicc. 192 mg., Folic Acid 0.85 mg., Vitamin B_{12} 10 mcgm., Ascorbic Acid 50 mg., Powdered Stomach 200 mg., Insoluble Liver Fraction 50 mg., Purified Intrinsic Factor 0.5 mg.

Capsules: Bottles of 100 & 1000.

LIVER INJECTION

***20 micrograms* Lederle U.S.P.**

The rational choice for maintenance treatment of pernicious anaemia. Made solely from beef liver, the injection secures maximum response with minimum pain. *Boxes* of 3 x 1 cc. Vials.

FOLVITE* *Folic Acid*

Fourth essential member of the vitamin B complex—is indicated in all megaloblastic anaemias except pernicious anaemia. *Tablets* (5 mg.): Tubes of 25; Bottles of 100 & 1000. *Elixir* (5 mg./5 cc.): Bottles of 4 fl. oz. *Solution* (15 mg./cc.): Vials of 10 cc. and Boxes of 12 x 1 cc. ampoules.

FOLVRON* *Folic Acid and Iron*

Combines folic acid with ferrous iron and is thus effective both for red cell maturation and haemoglobin production. Each capsule contains: Folvite Folic Acid 1.7 mg., Ferr. Sulph. Exsicc. 0.194 Gm. *Capsules:* Bottles of 100 & 1000. *Elixir:* Bottles of 16 fl. oz. *Tablets:* Bottles of 100 & 1000.

* *Regd. Trade Mark*

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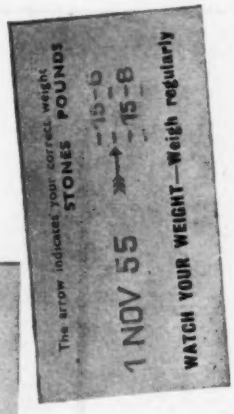

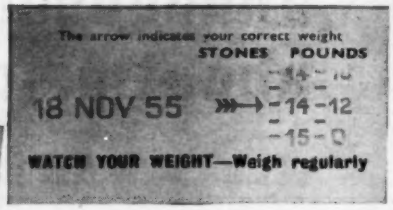

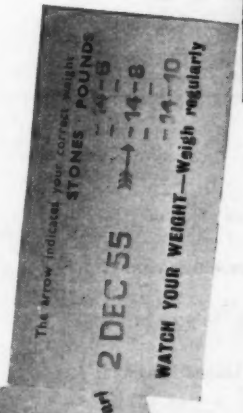

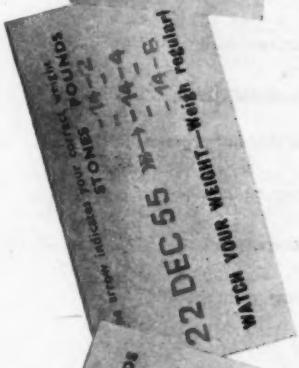

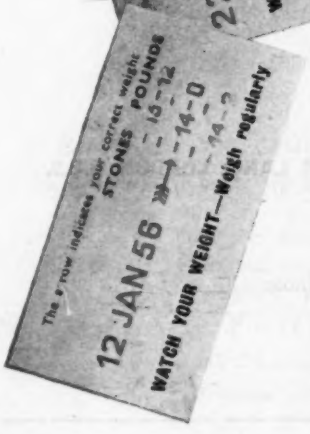

PRELUDIN*

the Appetite Controlling Agent that is Safe even in Cardiovascular Disorders

PRELUDIN is new and PRELUDIN is news because it provides a new practical answer to an old problem. Here for the first time is a treatment for obesity that is safe, swift and sure for *all* patients—and particularly for those with cardiovascular disorders and hypertension.

PRELUDIN is an appetite controlling agent. It acts quickly and effectively without risk by controlling the patient's appetite and breaking the psychogenic overeating habit, thus curbing food intake.

It enables the patient to lose weight safely and without mental strain by strengthening adherence to a prescribed diet.

PRELUDIN, in recommended dosage, unlike dexamphetamine, does *not* raise the blood pressure, does *not* affect the heart, and does *not* create excessive mental stimulation. It is the prescription of choice in *all* cases of obesity—especially those with cardiovascular disorders—because it reduces the risk of reducing.

P···R···E···L···U···D···I···N

brand of 2 - phenyl - 3 - methyl - tetrahydro - 1, 4 - oxazine - hydrochloride

—the safe prescription for obesity

INGELHEIM

Manufactured and distributed in England by Pfizer Ltd., for C. H. Boehringer Sohn, Ingelheim am Rhein, Registered proprietors of the trade mark.

**Registered Trade Mark*

important announcement about prices

In common with the A. J. White group of companies, we have decided that there will be no increase during the next six months in the price of any of our products marketed in the United Kingdom.

Engaged as we are in an industry one third of whose output is bought through the National Health Service by the Government, we believe that our promise of stable prices will play a part in stemming the tide of inflation. For restraint in expenditure is as essential in the public sector of economy, as in the private.

M&J MENLEY & JAMES LIMITED, COLDHARBOUR LANE, LONDON, S.E.5.

One of the AJW Group

BARBITURATE AND MORPHINE ANTAGONISTS

MEGIMIDE (BRAND OF BEMEGRIDE)
β-ethyl-β-methylglutarimide

and

DAPTAZOLE (BRAND OF AMIPHENAZOLE)
2:4-Diamino-5-phenylthiazole hydrochloride

in Barbiturate Poisoning

"MEGIMIDE" is "a barbiturate antagonist of real clinical worth. To omit to use it in the treatment of barbiturate poisoning is to run the risk of the broncho-pneumonia that is so often fatal in these cases." (See *Lancet*, 1955, *i*, 181)
"DAPTAZOLE," itself a weak barbiturate antagonist, enhances the action of "Megimide."
"Megimide" and "Daptazole" administered together intravenously ensure safe, quick recovery from barbiturate intoxication without the risk of convulsions and secondary depression which often follow the use of other central analeptics.

in Morphine Administration

"DAPTAZOLE," the new morphine antagonist, has recently been shown (*Brit. Med. J.*, 1955, *i*, 1367) to remove the risk of respiratory depression associated with high morphine dosage and to make tolerance or addiction unlikely.
"Daptazole" relieves respiratory depression by increasing the depth of respiration, while in some cases the vomiting and, in most cases, the constipation associated with morphine are also relieved.

in Barbiturate Anaesthesia

"MEGIMIDE" is of value to lighten or terminate the anaesthesia of patients under the influence of barbituric anaesthetics.

Further details and supplies of "Megimide" and "Daptazole" available to the medical profession on request.

NICHOLAS PRODUCTS LABORATORIES LIMITED
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A new standard of efficacy

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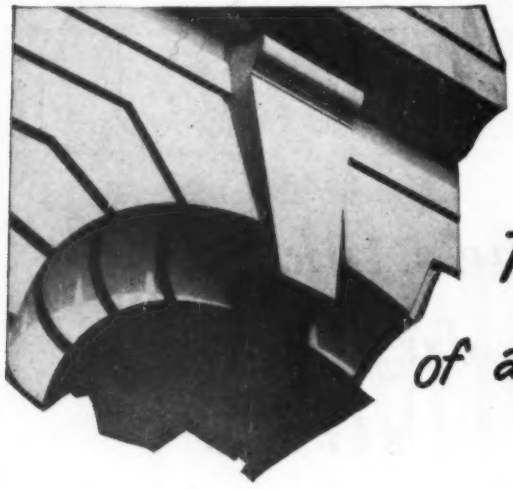

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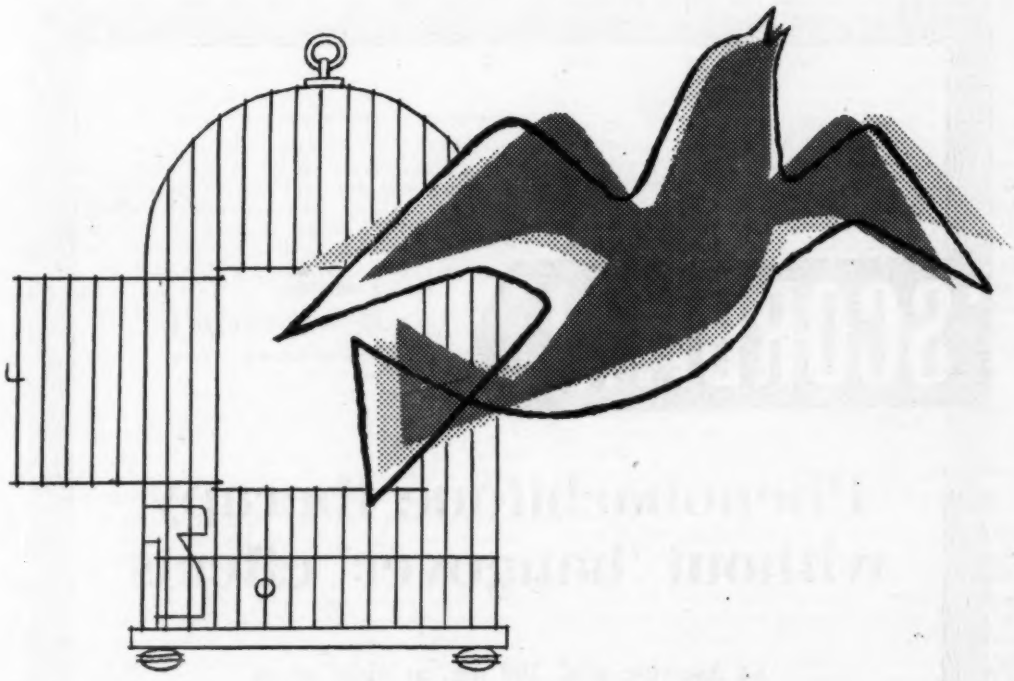

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LIFE
(BIOLOGICAL, NOT BIOGRAPHICAL)*

ROBERT PLATT
M.D. Sheff., M.Sc. Manc., F.R.C.P.
PROFESSOR OF MEDICINE IN THE UNIVERSITY OF MANCHESTER

WHEN Christopher Wren was making his experiments on blood-transfusion and the intravenous injection of fluids, and 70 years or so later when that clergyman Stephen Hales was demonstrating and measuring the blood-pressure of the horse, an educated gentleman (and there were such) could comprehend the whole of science, and even contribute to it by his own observation and experiment.

Yet I suppose even in the 17th century a reservation would have to be made for mathematics, which had already reached considerable maturity and complexity, especially in its application to astronomy and to navigation, so much older is it than the rest of science. Napier, whose logarithms to base *e* still do not enter into the daily thought of most of us, died in 1617.

Even in the 19th century, amateurs such as Mendel and Galton made observations which were the starting-point of a new science. Today it becomes harder and harder to do so, although still not impossible, as we see for instance when technical advances bring the amateur into unexplored territory as with Hillary to Everest or Cousteau to the depths of the sea.

Yet physics has split from chemistry, and even chemistry itself has split into so many fragments that the specialist in each branch has difficulty in understanding the language of his colleagues. In medicine you need no reminder of how difficult it is becoming (as a colleague of mine has said) for one man to understand both cardiology and electrocardiography at the same time. The difficulty is not simply that knowledge has increased in extent and complexity. The point is that as we begin to explore any part of our own subject in greater depth we at once feel the need of knowledge and techniques which belong to sister sciences, and are not readily at our command. For all these reasons it is a good thing from time to time to try to observe, if only as an interested spectator, some field of knowledge other than our own, and occasionally to be prepared to discuss it—even, as Schrödinger (1945) says in a similar context, "at the risk of making fools of ourselves." We cannot of course hope to become expert in other men's specialties; but we can see them from a point of view determined by our own interest, background, and training; and in doing so we may occasionally ask a new question even if it is unlikely that we supply an answer. It is with these considerations in mind that I shall speak on some fragments of biological knowledge which I personally find interesting.

Life at a Standstill

Our bold colleagues the surgeons, with the help of their equally enterprising anæsthetists, have been making tentative studies in hypothermia. They have, I believe, reduced the human body-temperature, without disaster, to between 21° and 25°C, at which level the heart is slowed and so is cellular metabolism; and tissues can thus be deprived of their blood-supply for a longer period than would be normally compatible with survival.

Biologists, who by recourse to animal experiment can usually be a move ahead, have succeeded in reducing the temperature of rats and hamsters to 0°C, and I have myself seen the experiments of Anjus and of Audrey Smith (Smith 1954) at the National Institute for Medical Research, at Mill Hill. As the animal's temperature is progressively reduced, respiration and circulation are arrested. The continuous record of the electrocardiogram slows down and then comes to a standstill. Yet the blood does not coagulate. Animals may be kept in an ice-bath in this state for an hour or so with a rectal temperature of −5°C. In some cases crystals of ice appear in the tissues. Yet when the animals are warmed they come to life again and behave like normal animals. The reviving process needs some care and skill: because it is important that the periphery is not warmed too rapidly, the process is carried on by diathermy. As the temperature rises, artificial respiration is carried out for a short time until spontaneous breathing is re-established. The animals do not suffer from frostbite unless the tissues have been handled and the joints flexed while they were in a frozen state. These experiments represent, I suppose, an extension of the natural phenomenon of hibernation; but they seem to me to pose certain questions on what constitutes life, at any rate in the mammal. If our definition requires that the heart should be beating, and the blood circulating and the individual regularly exchanging carbon dioxide for oxygen, then clearly these animals are dead. I am sure that they are legally dead, though physiologically they must be still alive.

But really all that is new is that this vital standstill takes place in a mammal. That life in the form of the seed of a plant can exist potentially for hundreds of years is of course well known. Equally remarkable, though perhaps not so dramatic, is the fact that mammalian germ-cells—for instance in rabbit ovaries—can be kept for a month or more at −79°C and by grafting into another animal can be made to function and produce new individuals. And this brings us to one of my main topics which is the transmission of life from one generation to the next.

Transmission of Life

I suppose the supremely important outcome of Mendel's work was that he showed heredity to be particulate where Darwin would have thought of it as blended. For although Mendel's work was published in 1866, during Darwin's lifetime, it lay unheeded in an obscure journal (the Proceedings of the Natürforschender Verein in Brünn) until it was rediscovered in 1900 long after Darwin's death. Darwin would have thought of each individual as a blend of its father and mother as two wines might be mixed in a bottle. Darwin would have expected (as you or I might) that if you cross tall and dwarf peas you would get plants intermediate between the two. Mendel showed that you didn't. They obstinately remained either tall or dwarf and in certain proportions dependent upon the genetic constitution of their parents. If we want a simile for Mendelian particulate inheritance we can think of ourselves as a lot of coloured beads in a bottle.† Each bead is some character inherited either from father or from mother. Each individual inherits a different assortment of beads from either parent; and so the pattern of the beads is infinitely variable, and every individual is unique, although the beads themselves, or the genes (if we now drop the simile), are transmitted unchanged through thousands or millions of generations.

And one of the most fascinating things about Mendelian inheritance is that, like many other things, it applies equally well not only to mice and men and monkeys but also to plants and in fact to anything which reproduces sexually. Sex itself is of course conveyed by Mendelian inheritance, and you will all be familiar with the concept of the X and Y chromosomes, the female (in the human species) being the homozygote XX and the male the heterozygote XY. Since the genes segregate in the

* Presidential address to the section of medicine of the Manchester Medical Society, April 6, 1955. Also used at a meeting of the Royal Australasian College of Physicians, Dunedin, Sept. 23, 1955.

† I cannot recollect whose simile this is. It is not mine.

germ-cells, which are haploid (that is containing only a single and not a double number of chromosomes and genes), all human ova are X whereas sperms are either X or Y. All the cells of the human body contain in their nuclei a replica of the 24 pairs of chromosomes, including of course the XY or XX pair which determine sex. It is therefore not surprising that recent work has established that certain sex differences can be discovered in somatic cells. An individual's sex may in fact be diagnosed from his leucocytes or more clearly by a skin biopsy.

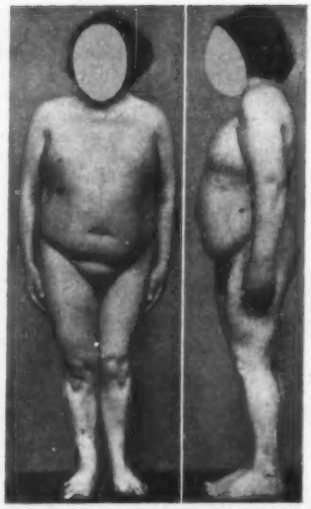


Fig. 1—A case of Turner's syndrome in which the genetic sex was male.

It has lately been found that in certain cases of ovarian agenesis, including those known as Turner's syndrome in which other congenital abnormalities coexist, the sex as determined by skin biopsy is male (fig. 1). These people appear to be female, but at the age of puberty they fail to develop secondary sexual characters. Examination shows an infantile vagina and uterus and no ovaries. Under the influence of œstrogens they can be transformed into apparently normal females except that, having no ovarian tissue, they are incapable of having children. One of our patients who was treated in this way (fig. 2) is successfully filling the female rôle of marriage to the satisfaction of both parties. It was only some years later when Polani, Hunter, and Lennox published their paper (Polani et al. 1954) that we discovered by skin biopsy that she is genetically male. Needless to say, this information has been kept to ourselves.

Biological Advantages of Sexuality

While on the subject of sex we may briefly consider the reasons in favour of sexual reproduction. Obviously sex is not necessary for the continuance of a race. Many primitive organisms divide and reproduce without sexual differentiation. Even in higher animals parthenogenesis may take place. The drone bee has no father. Loeb in 1899 was able to make starfish eggs develop without fertilisation. Bataillon in 1911 produced tadpoles from frog spawn by artificial stimulation. Gregory Pincus, in 1939, after a large number of experiments, produced three fatherless rabbits (Pincus 1939).

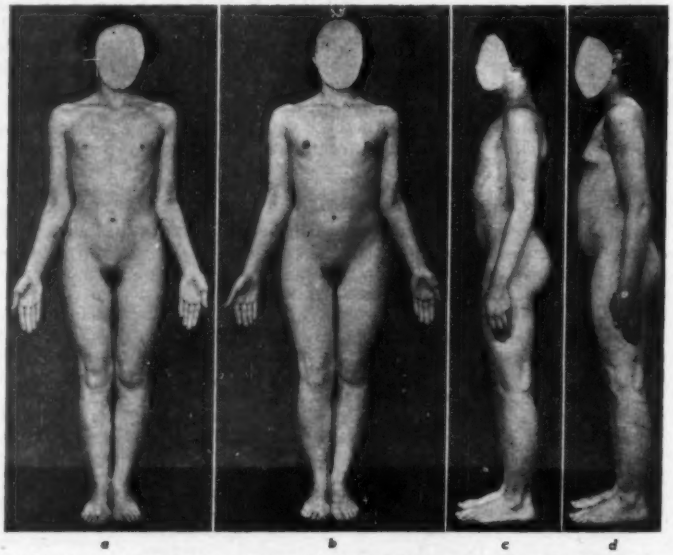
Why then has sexuality been adopted by all the higher species?

The union of two individuals has two major effects. One is that, by Mendel's law of independent assortment, separate characters previously found in two different individuals may meet in the next generation and appear together in the same individual. Sexuality thus produces the new variants on which the process of evolution can act by natural selection. Darwin, who thought heredity to be a blending of characters instead of a reassortment, was aware of this difficulty to the acceptance of his theory of evolution; for a blended heredity would lead to uniformity. Tall and dwarf peas, for instance, would in the subsequent generations all end up as medium in height. He therefore postulated that sudden unpredictable variations, or mutations as we would now call them, were very important for evolution. We can now see that this is not so. Sex plus particulate inheritance—the gene system in fact—produces most of the necessary variation. Natural selection will favour the survival of new and advantageous products of sexual reproduction. Inbreeding within a small population will tend to limit the number of variants and new patterns, whereas outbreeding will increase them. This is no doubt one reason why we find in Nature many devices to discourage inbreeding, such as "the heterostyly of the primrose and the Table of Kindred and Affinity of the Prayer-book" as Haldane (1954) observes.

Sexuality has, however, another major effect, somewhat in the opposite direction. It provides that all individuals are diploid—that is, they have a double set of genes and chromosomes. This makes for stability in the race; for new mutations, which are usually disadvantageous, are usually recessive and are not immediately apparent. It has, in fact, been calculated that a new mutation occurring today, either spontaneously or as a result of all the radiation at present being released in the world, would be unlikely to show itself for some 500 years. But this is no reason why we should neglect the problem; and of course a cousin marriage might bring two mutant recessive genes together much more quickly. One hesitates to think what might be the result of a cousin marriage in Hiroshima, or for that matter a marriage of cousins whose common grandmother had been a radiographer.

I have said that each individual is unique, a new pattern being formed although the genes themselves are transmitted unchanged. But both statements, of course, require qualification. Identical twins are the exception to the uniqueness of pattern, and mutations are the exception to the unchanging nature of genes.

It is now well known that there are two kinds of twins—those in which the fertilised ovum has split into



a b c d

Fig. 2—A case of ovarian agenesis in which the genetic sex was male: a and c, before treatment; b and d after treatment with œstrogens.

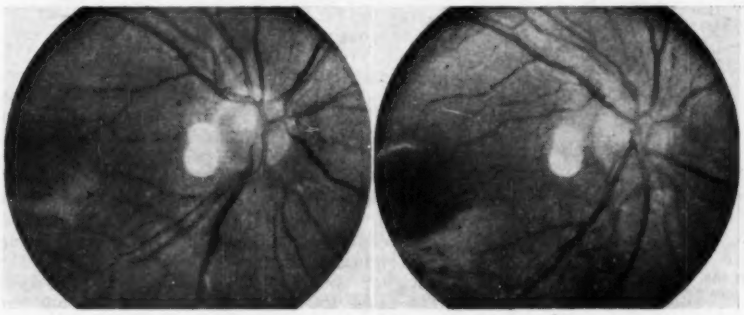


Fig. 3—Retinal photographs from the identical twins illustrated in fig. 4.

two before going on to its normal embryological development (the so-called uniovular or identical twins), and those in which two ova are fertilised by two sperms at the same time, and are simply brother and sister (or two brothers or two sisters) sharing the uterus at the same time. It is not so well known that there may be a third type of twin (obviously a theoretical possibility) in which the ovum splits into two before fertilisation and the two halves are fertilised by separate sperms. (Or alternatively the second polar body of meiosis is fertilised as well as the ovum.) In this case most characters transmitted from the mother would be identical in the two twins, whereas those derived paternally would be dissimilar in expected proportions. Not very uncommonly the resemblance between twins is far stronger than the resemblance which is usual between two siblings, and yet they differ in some obviously inherited characteristic such as hair or eye colour. No-one, so far as I know, has made any important study of this problem. If a great enough number of twins, together with their two parents, could be assembled, and their blood-groups examined, there might be statistical evidence of the existence of this type of twin. Taking the MN groups, for instance, the combination MN in one parent and N in the other should yield equal numbers of MN and N in the offspring. If twins are identical, all their blood-groups will of course be identical; but if there are significant numbers of dissimilar twins derived from one ovum and two sperms, there should be a greater likelihood of the twins inheriting the same group where the mother is the heterozygote than where the father is.

Coördination of Development

An interest both in retinal photography and in twins has led me with the help of Raymond Lawton to study the retinæ of identical and non-identical twins. The pattern of each retina is unique for each individual: it is as distinctive as his fingerprints or electrocardiogram. Hence, if identical twins had identical retinæ, retinoscopy would have been a ready and very useful method of distinguishing between uniovular and binovular twins. However, it turned out differently. Although with practice one can often pick out from a number of retinal photographs those which belong to a pair of identical twins, the vessels after they have left the disc are usually very unlike. One can in fact easily tell one twin from the other with an ophthalmoscope, even when it may be socially very difficult to do so (figs 3 and 4). It looks as if the genes lay down the general plan but not the full detail of our architecture, and that after a certain stage of development some kind of controlling or coördinating mechanism is in operation, as if "the organism knew in advance what it wanted" as Graham Cannon has said.

This kind of phenomenon has led some biologists, such as Cannon and the late Frederic Wood Jones, to wonder if Darwinian selection can account for all evolution and all the adaptations found in Nature. Take the development of the human eye for instance, says Cannon (and I hope I do not misrepresent him): it is inconceivable, he says, that it should develop without some process of coördination regulating the simultaneous development of retina, vessels, lens, and so on. Right, say the orthodox biologists; then no doubt there are inherited coördinating genes, which are so to speak in charge of the process. Then, says Cannon, those genes must have been evolved before the human eye could develop, so that the control of the process was laid down before the organ appeared. In other words Lamarck perhaps was somewhere near the truth when he postulated that it is the need of a new organ which results in its production.

Acquired Characteristics

There are, however, experimental as well as philosophical doubts as to the adequacy of orthodox views on evolution; and here the study of the genetic behaviour of primitive organisms such as moulds and bacteria has been very important. Why do tubercle bacilli become resistant to streptomycin, for instance? Do they learn to adapt their metabolism to it so that it is no longer harmful? If so, they clearly pass on this acquired

Fig. 4—See fig. 3.

characteristic to future generations. Or is this only Darwinism on a shorter time-scale? Do a few bacilli exist from the beginning which by some natural mutation have all along been resistant to streptomycin? If so, they will survive when all their fellow bacteria are killed off and the new generations will come to be composed only of resistant strains developed by selection from these mutants.

It is difficult to plan crucial experiments to decide between these alternatives. There is no doubt whatever that certain bacteria and moulds can be "trained" in the performance of certain biochemical processes: that is, they can be trained to do without a certain substance or to accept one which is normally poisonous to them. There is equally no doubt that this acquired ability can be passed on to future generations. The difficulty is to tell whether a new skill has been acquired, or an existing one developed; and in transmission to decide between true nuclear inheritance and protoplasmic transfer, and, in some cases, to exclude the possibility of virus transmission. Despite the difficulties, there seems to be evidence which satisfies such authorities as Haldane and

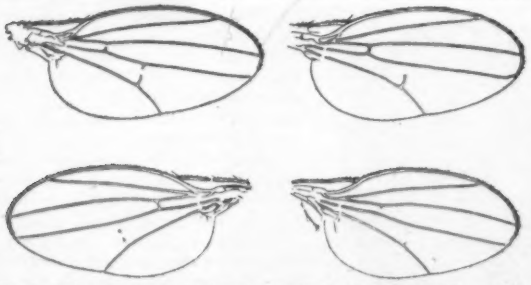


Fig. 5—Defect in the posterior cross-veins in the wings of *Drosophila melanogaster* (see text). *(Reproduced from "Endeavour.")*

Hinshelwood that in some cases the hereditary transmission of an acquired characteristic has been proved in the bacterial world.

In higher forms of life, Waddington's recently reported transmission of an acquired characteristic in drosophila is important (Waddington 1952). If these flies are exposed to a temperature of 40°C for a few hours at a certain stage of their development, about 40% show a variant in the veins of the wing (fig. 5). If now those which show the abnormality are bred among each other, in about twelve generations flies begin to appear (and eventually reach a prevalence of about 80%) in which the cross-vein-less abnormality occurs without the application of the environmental stimulus. The implication for evolution is this: evolution by selection does not merely act on a series of chance variants but also affects the sensitivity of individuals to react to an environmental stimulus. Thus if we may jump a long way from Waddington's experiment we see that, starting with a race of white men who easily adapted to sunshine by pigmentation, we might, by the action of selection in a tropical environment, end with a race of Negroes.

Before leaving the subject of the transmission of acquired characteristics I must refer again to the possibility of virus transmission in some instances in plants and bacteria; and there is at least one instance of virus transmission in the mammal. Bittner studied strains of mice susceptible to breast cancer. In some strains a very large proportion of the adult female mice developed breast tumours. He found, however, that if the mice of a non-susceptible strain are suckled by a mother of a susceptible strain and vice versa, transmission of the tumour tendency is by the milk line and not by the ordinary rules of heredity. It now seems certain that a virus is transmitted in the milk, which gives rise to breast cancer in later life. The possibility that this happens in the human species has not been ruled out.

The study of genetics in simpler organisms such as bacteria and fungi has given rise to other discoveries. By exposing fungi such as neurospora to X rays a large number of mutant strains can be produced, each of which seems to give rise to a specific and single block in the synthesis of certain amino-acids. Thus normal stocks of neurospora will grow on a minimal medium consisting of water, inorganic salts, glucose, and a trace of biotin. The mutant strains fail to grow, but will do so if given the specific amino-acid which they now fail to synthesise or in some cases a precursor. In this way a good many metabolic pathways have been mapped out, some of which probably have an important bearing on cell metabolism in higher animals. Indeed, mutations in the human subject, giving rise to "inborn errors of metabolism" are, as Archibald Garrod recognised years ago, blocks in the sequence of cell biochemistry.

The Nuclear Material

The main substance of the nuclear genetic material appears to be desoxyribonucleic acid (D.N.A.), and work by Watson and Crick (1953), which is rather exciting, though I do not profess to understand it, suggests a molecular structure for this compound which gives at the same time an inkling of how nuclear material may duplicate itself. D.N.A., they postulate, consists of a double chain arranged in helical form (fig. 6). The two chains are held together by hydrogen bonds between the organic bases which are part of the molecule, and in which, for physicochemical reasons, only certain linkages are possible. Thus adenine must pair with thymine, and guanine with cytosine. If the two chains come apart, as they presumably do before reproduction, each acts as a template on which another chain forms according to the design necessitated by the structure of the existing chain. The original work should be consulted. At the 1954 meeting of the British Association Dr. Chayen cast doubts upon the likelihood of D.N.A. being the essential substance of genes, but it is clearly associated with them. It is not itself a protein, though it has a molecular weight of 1–4 million.

Some very interesting observations have lately been made on the genetic functions of this substance D.N.A., which seems to be just as important in the genetics of bacteria as it is in man. Hotchkiss (1953–54) and others have shown that unencapsulated relatively avirulent pneumococci can be made into virulent encapsulated organisms by transferring D.N.A. from killed organisms of the encapsulated type. Now the capsules consist largely of polysaccharides; so it is definitely not the capsular substance which is being transferred, but the genetic control of its development.

Perhaps even more remarkable, the same workers have shown that drug resistance in pneumococci—for instance, resistance to penicillin or streptomycin—can be transferred to non-resistant strains by transfer of an extract which contains D.N.A. but as far as possible is freed from all other components of the resistant organisms. The resistance so transferred is then transmitted through succeeding generations.

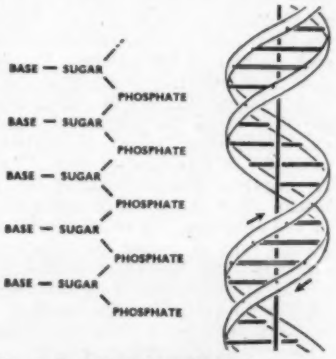


Fig. 6—Structural formula of desoxyribonucleic acid (see text).
(Reproduced from "Nature.")

Obviously I am even less well equipped to discuss these matters of bio-physical-chemistry than I am most of the rest of the material of this lecture; but having got so far I would like at least to allude to some of the work of Krebs on cellular metabolism (Krebs 1953), for one cannot consider life simply as a beginning and end without even asking how it is maintained in the individual. The beauty of Krebs's concepts is that, like others we have been discussing, they appear to be as applicable to protozoa as to the higher mammals, and probably with reservations to plants and bacteria as well. He shows how the initial phase in energy production is the breakdown of large molecules of foodstuffs into smaller units. The next phase is the partial oxidation of these into only three substances—acetyl co-enzyme A, α-ketoglutaric acid, and oxalo-acetic acid. The utilisation of these provides the energy which is built up into that universal storage battery of chemical energy A.T.P. (adenosine triphosphate) which seems to be the source of all readily available energy for body processes. It seems certain that A.T.P. (or in some cases I.T.P.—inosine triphosphate)

supplies energy for the osmotic work of cells, for the contractile phase of muscular work (Weber 1953–54), and probably for the resynthesis of acetylcholine hydrolysed during nervous conduction (Nachmansohn 1953–54).

Disease and Natural Selection

Having thus skated on some extraordinarily thin ice I shall pass on to matters which I can understand rather better—back to human disease and the end of life. Now that so many of the hazards of infancy, and the infective disorders of the young, have been mastered by the progress of scientific knowledge, more of us die of what we think of as the great constitutional diseases —atheroma (with coronary occlusion and myocardial infarction), hypertension, and cancer. When we use that old-fashioned term constitutional, we infer that there is something inherent in the make-up of the individual which, no doubt along with environmental influences such as cigarette-smoking and being a doctor, renders the person liable to a disease which does not seem to be determined by such obvious external factors as trauma or infection. Though we know little enough of these diseases, two things at least are clear about their ætiology. One is that hereditary factors are important. (They may not be very apparent in most cases of cancer, but critical investigations have usually revealed them in some form. In hypertension they are much more in evidence, and I have myself contributed to the investigation of this phenomenon.) The second is that they all tend to occur not so much in old age as in what we euphemistically call middle life, 45–60 years old. We all know exceptions, but no one of us would deny that cancer and severe hypertension are commoner at 55 than they are at 35.

As both Medawar (1951) and Haldane (1954) have pointed out, if a disease is partly determined by heredity and if the age of its onset is also under hereditary influences, then natural selection will gradually determine that it occurs more and more in the post-reproductive period, which we may call 45–60 when most of us have finished having families. For a man or woman who had one of these disorders in a form in which it occurred at the age of 30 would on the average have fewer children to whom to pass on the hereditary influence.

So it seems that the reason why these diseases attack us in so-called middle life is that evolutionary processes have pushed their incidence back towards that age. After the reproductive period, so far from being selected out of the population, selection will if anything tend to favour these diseases (as Haldane somewhat cynically remarks), since the survival of a race will be favoured by not having too many elderly folk for the young ones to support. And so you may infer that the prevalence of coronary thrombosis among physicians is really Nature's answer to the problem of the Senior Registrars.

Clonal Ageing

My last topic is clonal ageing, and I am glad to see that there has been a revival of interest in this subject.

A clone is a group or family of individuals all derived from a single cell. In primitive organisms such as paramecium, and in plants, where reproduction may be sexual or asexual, a single fertilised cell, the result of sexual conjugation, may divide and divide again by a series of mitoses until a large number of individuals have resulted. They then undergo, all at the same time, some ageing process; and unless a further sexual conjugation has taken place, the line will give out and the cells will reproduce no longer. Sonneborn (1955) has explored the reasons for this in paramecium, and finds it to be due to inaccurate copying processes in mitotic division.

You may ask what bearing this has on higher organisms. But if you think of yourselves you will realise that every cell in the human body is the result of the asexual mitotic division of another cell, and that, in turn, of another cell, and so on until we get back to the single fertilised ovum from which we all originated. It often gives me some quiet satisfaction to realise that whatever you may think of yourselves biographically, biologically you are nothing but a lot of clones. If geriatrics ever becomes a science it may owe more to professors who study paramecium than to those who work at the bedside, important though the latter's work may be in a social and humane context.

Life and Death

In conclusion I return to Schrödinger's introduction to his little book "*What is Life?*" In it he quotes Spinoza as saying: "There is nothing upon which a free man ponders less than death; his wisdom is to meditate not on death but on life." If by this Spinoza meant what I think he meant, then I disagree; for I believe that a wise man, at any rate when he reaches the post-reproductive age, should meditate now and then upon death, if only to face it courageously should it announce its coming in advance. Though perhaps not with the morbid preoccupation of Charles Morgan's Sparkenbroke, I nevertheless find death a fascinating subject; and perhaps at some future time I may be permitted to address you on that theme. If so I shall of course be under the handicap of not being able to speak from personal experience.

I am grateful to Professor Waddington and the Editor of *Endeavour*, and to Dr. Watson and Dr. Crick, and the Editors of *Nature*, for permission to use figs. 5 and 6.

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SEROLOGICAL EPIDEMIOLOGY OF POLIOMYELITIS

DISTRIBUTION OF IMMUNITY TO POLIOMYELITIS VIRUS

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OVER the last eighty years the incidence of poliomyelitis has much increased, especially in Scandinavia (where the first large epidemics were observed), North America, Australasia, and Western Europe. Epidemics have occurred elsewhere, particularly in some island communities, but in the main have not been so large as in the above-mentioned areas.

In those countries where epidemics occur frequently there has been a shift in the age-group attacked. Whereas poliomyelitis most often affected children younger than school age in the earlier part of the present century, it now most often affects children of school age, adolescents, and young adults. This change has not been noted in those countries where epidemics either have not occurred or have only occurred in the last few years.

The countries principally affected by epidemic poliomyelitis are those where the standard of living is high, and Olin (1951) suggests that in these countries the

chances of coming into contact with the virus at an early age have been reduced, compared with the chances in the underdeveloped countries of the world. This being so, contact with the virus takes place at a later age in highly civilised countries; and, as with many other viruses, when infection does take place, the manifestations are more severe than they would have been if infection had taken place earlier in life.

Serological surveys have shown that contact with the virus of poliomyelitis does take place at an early age in the underdeveloped areas of the world (Paul et al. 1952, Paul 1954), and that in America (e.g., Melnick and Ledinko 1953) early infection with the three types of poliomyelitis virus does not take place to the same extent as in Cairo and North Africa.

In this country poliomyelitis has occurred in widespread epidemic form only since 1947. The reasons why epidemics appeared later in this country than in other countries with a high standard of living are not clear. Serological surveys may shed some light on this problem.

Present Investigation

Bradley (1954) notes that eighteen areas in England and Wales did not notify cases of poliomyelitis in 1922–52 inclusive. The largest area had a population of 9400; the others had much smaller populations. Bradley suggests that these areas escaped because they had not been exposed to the virus. It was decided to investigate Betws-y-Coed in North Wales because no notification of poliomyelitis had been received from there since poliomyelitis became notifiable in 1912. Liverpool, where poliomyelitis occurs annually, was used for comparison.

Sera obtained from children in both Betws-y-Coed and Liverpool were examined for antibodies to the three types of poliomyelitis virus. The child population was surveyed because they are less likely than adults to have acquired antibodies to poliomyelitis virus outside the areas in which they live. Furthermore, the level of serum antibodies to poliomyelitis virus in the child population reflects the recent prevalence of the virus in the community.

During these surveys attempts were made to isolate poliomyelitis virus from the sewage of Betws-y-Coed. The methods of ammonium-sulphate precipitation (Gard 1940) and ultracentrifugation (Melnick 1943) and a combination of the two (Melnick 1947) were used without success.

AREAS SURVEYED

Betws-y-Coed is a village in North Wales with a population of about 750 (Registrar-General's estimate for mid-1954), this figure having varied only slightly in recent years. The village is a popular holiday resort, many people visiting it for the day in addition to those staying for longer periods. All children of school age up to 11 years attend the local county primary school. Some children then proceed to a grammar school in a neighbouring town, the remainder continuing to attend the local school until they reach the age of 15. Apart from the holiday trade the principal local occupation is agriculture, and some of the children attending the primary school live either on farms or in houses outside the village. The village's water-supply comes from a reservoir in the neighbouring hills and is chlorinated. The school and all the houses in the village have satisfactory drainage, the untreated sewage effluent being discharged into a river about $^1/_2$ mile below the village.

Liverpool is an industrial port with a population of about 786,000 (Registrar-General's estimate for 1954). Some of the population live in tenements, and there are still some overcrowded slums in the city. Apart from this the general housing is moderately satisfactory. Poliomyelitis has occurred with increased frequency during the last few years, the largest outbreak being in 1951, when 135 cases were notified.

POPULATION EXAMINED

In Betws-y-Coed samples of blood were obtained during the winter of 1954–55 from children attending the local infant-welfare clinic and the county primary school. Their ages ranged from 7 months to 14 years. Of an estimated child population of 176 aged 0–14 years, serum was available from 78.

In Liverpool, children's sera were obtained from hospital laboratories to which they had been sent for other investigations. No child with a history of poliomyelitis was included in the survey. The age range was the same as that for Betws-y-Coed. 71 sera were examined from Liverpool.

METHODS

Sera were obtained by venepuncture or by heel puncture according to the child's age. After inactivation at 56°C for 30 minutes sera were examined initially at a dilution (after addition of virus suspension) of 1 : 10. Those sera from Betws-y-Coed which neutralised one or more types of poliomyelitis virus were re-examined at a final dilution of 1 : 100, whereas those which did not neutralise at 1 : 10 dilution were re-examined at a final dilution of 1 : 2 against the appropriate virus types.

Tissue-cultures used for examining sera were either of rhesus monkey kidney or of HeLa cells. Most of the sera were examined by using cultures of monkey kidney, and all the serum titrations were done in these cultures. Two types of monkey-kidney cultures were used: fragment cultures and cultures of trypsin-dispersed kidney. The latter were set up by the method first described by Dulbecco and Vogt (1954) and modified by Youngner (1954). Before fragment cultures were used for neutralisation tests or for virus propagation, the fragments were shaken off the roller-tube wall, leaving the sheet of epithelial outgrowth behind. The culture medium used for most of the tests was that described by Melnick et al. (1954), except that Earle's balanced salt solution was used instead of Hanks' solution. HeLa cells were maintained as described by Syverton et al. (1954), except that trypsin-dispersion of cells before subculture was abandoned in favour of dispersion of cells by simply pipetting the cell suspension (obtained by scraping the cells off the tube wall) up and down until most of the cell clumps were broken up. A modification of the medium described by Kret (1955) proved satisfactory for maintaining the cells when they were being used for either neutralisation tests or virus propagation.

Virus strains were: type 1, Mahoney strain; type 2, Y-SK strain; type 3, Saukett strain. They were received from the Central Public Health Laboratory, Colindale. Virus pools were made by passage of the three strains in cultures of monkey kidney or HeLa cells, and the same pools were used throughout these tests. The titres of the aliquots of each pool were determined before their use in the neutralisation test. The 50% infectious dose for tissue-culture (TCD50) was calculated by the method of Kaerber (1931).

Tissue-culture neutralisation test.—Serum neutralisation tests were set up by the method described by Ledinko et al. (1952). Equal volumes of diluted inactivated serum and a suspension containing 200 TCD50 of the appropriate type of virus in each 0·1 ml. were mixed and allowed to stand at room-temperature for 1 hour. Mixtures of each serum with each of the three types of poliomyelitis virus were set up. After 1 hour 0·1 ml. of each virus-serum mixture was pipetted into each of two tissue-culture tubes from which the culture medium had been removed. 0·1 ml. of a mixture of serum and balanced salt solution was pipetted into one culture tube, which acted as a serum control. With each test six cultures were used for virus controls, two tubes being inoculated for each type of virus, the final dose of virus being the same as in the neutralisation tests—i.e., 100 TCD50. Cultures were left at room-temperature on the bench for 30 minutes to ensure maximal contact of the inoculum with the cells. At the end of this time cultures received 1 ml. of medium and were then placed in a roller drum at 37°C and after 5 days examined by low-power microscopy. The presence of antibody was indicated by the absence of "cytopathic" changes in the cultures, which changes were evident in the virus control tubes. Positive sera of known antibody content were not available when the testing was begun.

RESULTS

Betws-y-Coed

The distribution of antibody to any type of poliomyelitis virus in relation to age is shown in fig. 1. Only 8 of the children were without antibody to one or more types of virus, and 5 of these were aged less than 2 years. Infection with type-1 virus has been commoner than with any other type (fig. 2). Antibodies to this virus type were present in some sera from even the youngest children, indicating that infection with type-1 virus had taken

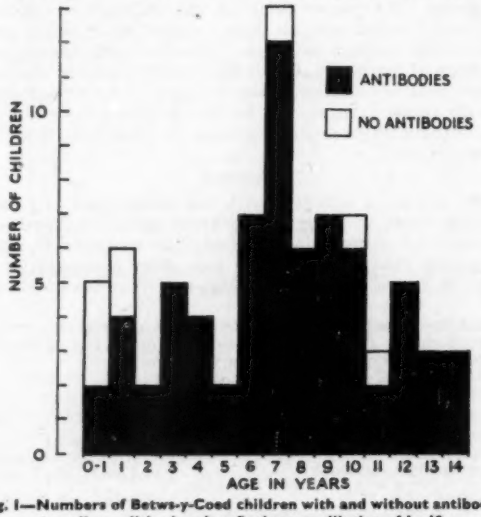

Fig. 1—Numbers of Betws-y-Coed children with and without antibodies to poliomyelitis virus in a final serum dilution of 1 : 10.

place in the village within the year preceding this investigation.

The distribution of antibodies to type-2 virus is shown in fig. 3. Except one child, aged 8 months, who had antibodies to all three types of poliomyelitis virus at a titre of 1 : 10, no child aged less than 2 years had antibodies to type-2 virus. It appears that infection with type-2 virus either had not taken place or had been very limited in distribution during the two years preceding this investigation.

Antibodies to type-3 virus were the least common in sera from Betws-y-Coed (fig. 4). Except in the child already mentioned they were not present in the sera of children aged less than 3 years. Table I shows the

TABLE I—NUMBERS OF CHILDREN EXAMINED FROM BETWS-Y-COED WITH SERUM ANTIBODIES TO ONE OR MORE TYPES OF POLIOMYELITIS VIRUS (1 : 10 SERUM DILUTION)

—	Age-group (yr.)			Total
	0–4	5–9	10–14	
No. of children examined	22	35	21	78
No. of children with antibody to a single type of virus	9	5	6	20
No. of children with antibodies to two types of virus	4	15	5	24
No. of children with antibodies to all three types of virus	4	14	8	26
No. of children with no antibody ..	5	1	2	8

numbers of children with antibodies to one, two, or all three types of poliomyelitis virus in each 5-year age-group. The figures show that the age-group 5–9 years had the highest proportion of children with antibodies to two or three types of poliomyelitis virus (83%). Even in the age-group 0–4 years 8 (36%) of the 22 children examined had multiple antibodies, illustrating again the widespread infection with poliomyelitis virus in this community.

After the sera had been tested for antibodies, inquiries were made into family relationships. It was found that 44 of the sera had been obtained from 2 or more children from each of 17 families. None of the children coming from these family groups had escaped infection with at least one type of poliomyelitis virus, and within each family the children had antibodies to at least one virus type in common. In 9 family groups the children within each family had been infected with the same virus

TABLE II—TITRES OF SERUM ANTIBODIES TO THE THREE TYPES OF POLIOMYELITIS VIRUS IN BETWS-Y-COED CHILDREN

Virus type	No. of sera having highest titres of		
	1 : 2	1 : 10	1 : 100 and over
1	1	40	14
2	1	23	27
3	..	19	18

types. In 4 families the youngest child lacked antibody to one type which the elder children had, and in one other family the youngest child had antibody to one more virus type than had the elder children. Although antibodies to all three types of virus were found among children living in isolated dwellings, antibody to type-1 virus was less common among them than among the village children. (Of the 15 children living outside the

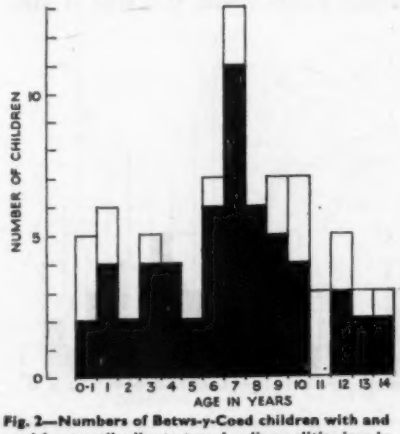

Fig. 2—Numbers of Betws-y-Coed children with and without antibodies to type-1 poliomyelitis virus in a final serum dilution of 1 : 10.

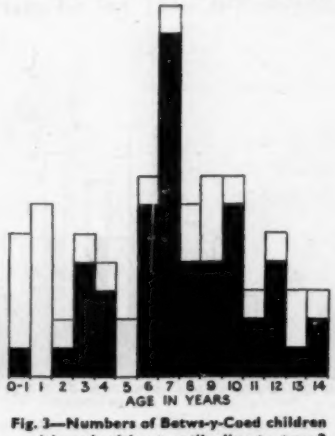

Fig. 3—Numbers of Betws-y-Coed children with and without antibodies to type-2 poliomyelitis virus in a final serum dilution of 1 : 10.

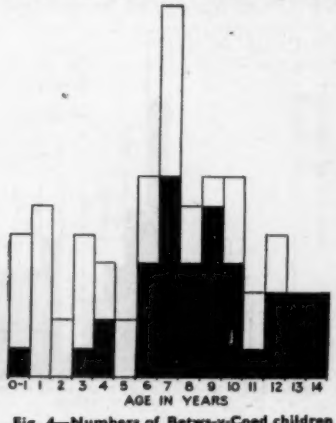

Fig. 4—Numbers of Betws-y-Coed children with and without antibodies to type-3 poliomyelitis virus in a final serum dilution of 1 : 10.

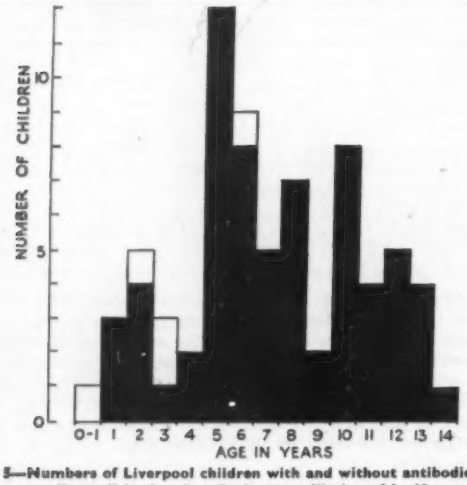

Fig. 5—Numbers of Liverpool children with and without antibodies to poliomyelitis virus in a final serum dilution of 1 : 10.

village 14 were aged 6–13 years ; and, if the numbers of these children with type-1 antibodies are compared with the numbers of children living in the village and having antibodies to type-1 virus, it appears that, whereas 5 of 14 children living outside the village had antibody to type-1 virus, 32 of 37 children in that age-group living in the village had antibody to that virus type.)

Table II shows the titres of serum antibodies to the three types of poliomyelitis virus found in Betws-y-Coed. Titres of 1 : 100 or over were less common for antibodies to type-1 virus than for antibodies to the other two types. This might well depend on the strain of type-1 virus used in the tests.

Liverpool

The numbers of children examined in each age-group with or without antibodies to one or other of the three types of poliomyelitis virus are shown in fig. 5. As was noted for Betws-y-Coed, the children with no antibodies to poliomyelitis virus were mainly in the younger age-groups. Of the 71 Liverpool children examined 66 (93%) had antibodies to one or other of the types of poliomyelitis virus. This shows that, in this area also, infection with the virus of poliomyelitis has been extremely common in recent years. Figs. 6–8 show the numbers of Liverpool children in each age-group with antibodies to the three types of virus. It can be seen that infection with each type of virus has taken place in almost every age-group, there being no suggestion that any one type had been absent from the community in recent years. Infection with types 1 and 2 has been more common than infection with type-3 virus. Thus, whereas 45 children were infected with type-1 virus and 46 with type-2, only 29 children had antibodies to type-3 virus.

Table III shows the numbers of Liverpool children in each five-year age-group with antibodies to one, two, or all three types of poliomyelitis virus. In the youngest age-group (0–4 years) none of the children examined had been infected with all three types of virus, but 5 had been infected with two types. Infection with more than one type of virus appears to have taken place in similar proportions of children in the 0–4 and 10–14 age-groups in both areas surveyed, but in the age-group 5–9 years it had apparently been less common in Liverpool than in Betws-y-Coed.

Discussion

The extent of infection with the three types of poliomyelitis virus in both of the areas surveyed, revealed by tests for neutralising antibody, is compared in figs. 9–11 with that in children in two other communities—Cairo in Egypt (Paul et al. 1952) and Winston-Salem in the U.S.A. (Melnick and Ledinko 1953). In Cairo clinical infection appears to be uncommon, whereas Winston-Salem had an epidemic of poliomyelitis shortly after the collection of the sera from which the results illustrated were obtained.

Fig. 9 shows that in Betws-y-Coed antibody to type-1 virus was more commonly found than in Cairo and in Liverpool. For type-2 virus the rate and extent of infection in Betws-y-Coed and Cairo appear to be similar, except that the 1-year-old group in Betws-y-Coed had not yet experienced infection with this type of virus

TABLE III—NUMBERS OF CHILDREN EXAMINED FROM LIVERPOOL WITH SERUM ANTIBODIES TO ONE OR MORE TYPES OF POLIOMYELITIS VIRUS (1 : 10 SERUM DILUTION)

—	Age-group (yr.)			Total
	0–4	5–9	10–14	
No. of children examined	14	35	22	71
No. of children with antibodies to a single type of virus	5	13	9	26
No. of children with antibodies to two types of virus	5	15	6	26
No. of children with antibodies to all three types of virus	..	7	7	14
No. of children with no antibody to poliomyelitis virus	4	1	0	5

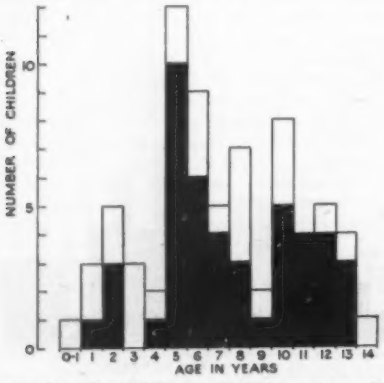

Fig. 6—Numbers of Liverpool children with and without antibodies to type-1 poliomyelitis virus in a final serum dilution of 1 : 10.

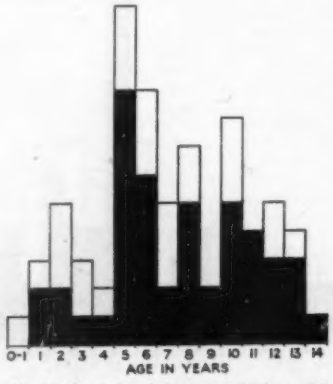

Fig. 7—Numbers of Liverpool children with and without antibodies to type-2 poliomyelitis virus in a final serum dilution of 1 : 10.

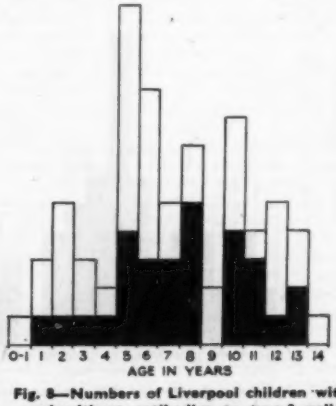

Fig. 8—Numbers of Liverpool children with and without antibodies to type-3 poliomyelitis virus in a final serum dilution of 1 : 10.

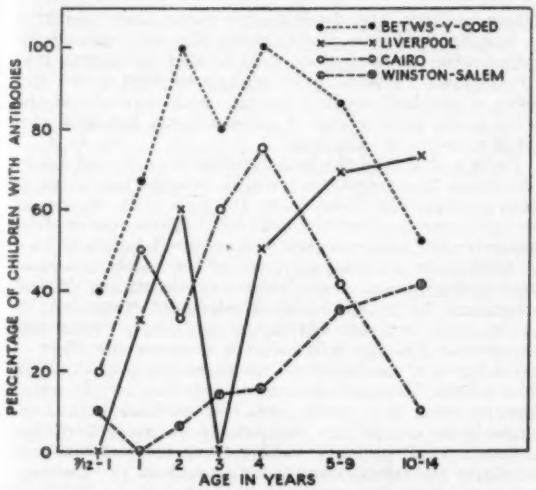

Fig. 9—Prevalence of antibodies to type-1 poliomyelitis virus in different populations.

(fig. 10). Liverpool children showed less evidence of infection with type-2 virus. Infection with type-3 virus has apparently been less common in the two areas surveyed than in Cairo (fig. 11). Infection with all three types of virus appears to have been less extensive in Winston-Salem than in Betws-y-Coed and Liverpool, although the difference for type-3 is not so obvious.

The results of the examination of children within families in Betws-y-Coed agree well with the findings of others who have shown that poliomyelitis virus is rapidly spread to susceptibles within the family (Zintek 1947, Brown et al. 1948, Bhatt et al. 1955, and others).

The reasons for the absence of notifications of clinical poliomyelitis from Betws-y-Coed are not clear. It is quite conceivable that clinical non-paralytic infection has taken place without being recognised; indeed, it is very dubious whether abortive infection is ever recognised in the absence of an epidemic. The absence of a frank paralytic case is not easy to explain but may be related to the small size of the community and possibly to the high rate of infection at an early age.

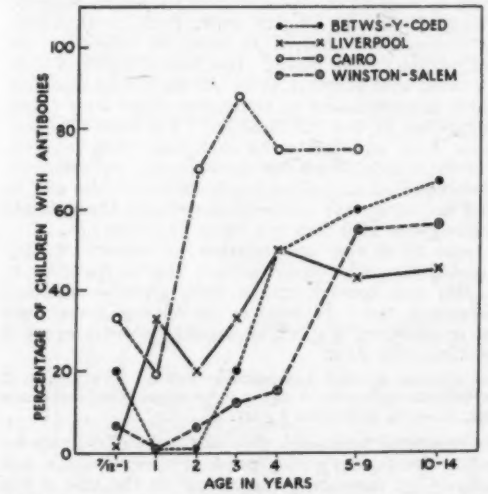

Fig. 11—Prevalence of antibodies to type-3 poliomyelitis virus in different populations.

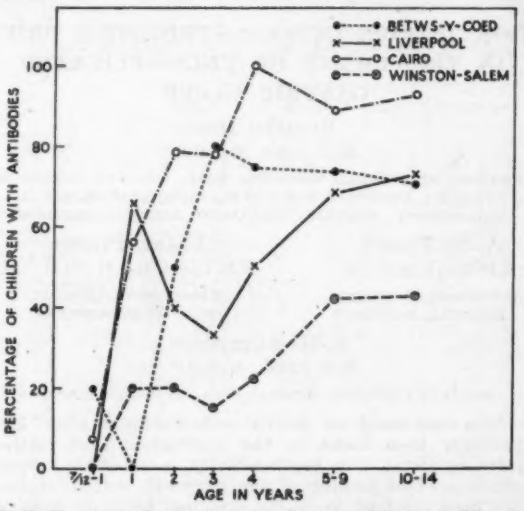

Fig. 10—Prevalence of antibodies to type-2 poliomyelitis virus in different populations.

This survey therefore shows that, in both areas, infection with all three types of poliomyelitis virus, and especially with types 1 and 2, must have been widespread. How far these findings are applicable to the country as a whole cannot be estimated, but the finding that infection has been more widespread at an early age in this country than in America may partly explain the lower incidence of clinical poliomyelitis in Britain.

Summary

The sera of children from Betws-y-Coed and Liverpool were examined by tissue-culture methods for antibodies to the three types of poliomyelitis virus.

Infection with all three types of poliomyelitis virus has apparently taken place recently in both areas, infection with types 1 and 2 predominating.

Although clinical infection with poliomyelitis virus has been observed in Liverpool, no case has been reported from Betws-y-Coed.

The findings are discussed in relation to the incidence of poliomyelitis in the two areas and to similar serological surveys in other countries.

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CONTINUOUS INTRAGASTRIC MILK DRIP IN TREATMENT OF UNCOMPLICATED GASTRIC ULCER

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THE treatment of gastric and duodenal ulcer has generally been based on the assumption that gastric juice, by virtue of its peptic activity, is one of the factors which prevent healing of the ulcer—if, indeed, it has not been assumed to be the principal factor in causing the initial breach in the mucosa. The Sippy régime aimed at eliminating peptic activity by neutralising the hydrochloric acid in the gastric juice, and it may possibly have had this effect throughout most of the day if administered according to Sippy's instructions.

Sippy (1915) gave hourly feeds of milk, eggs, and purées from 7 A.M. to 8 P.M. and sufficient alkali midway between each feed to prevent free hydrochloric acid appearing in the juice immediately before the next. The last feed was followed by half-hourly doses of alkali for 2–2½ hours, and the gastric contents were aspirated two or three times in the night so long as "excessive night secretion" persisted (i.e., an amount of more than "about 10 c.c.").

The régime was onerous for the patient and required constant nursing attention; for practical reasons it has seldom been followed according to Sippy's exact instructions. Any less strict technique is certainly inadequate to produce continuous neutralisation. Nicol (1939), for example, found that hourly feeds of milk and vegetable purée, with 1 drachm of alkali four times a day, not only failed to neutralise the gastric contents but had less effect than an ordinary light diet, given at 2–3-hourly intervals.

Nicol gave a powder consisting of 1 part of heavy magnesium carbonate, 1 part of calcium carbonate, and 2 parts of sodium bicarbonate. In addition he gave ½ oz. of olive oil and atropine sulphate gr. $^1/_{200}$ thrice daily.

A more promising technique was introduced by Winkelstein (1932, 1933), who tried to achieve neutralisation over the whole 24 hours by giving patients a continuous intragastric drip of milk, to each quart of which was added 5 g. of sodium bicarbonate. With this method ulcers which would not respond to standard forms of treatment have healed rapidly (Winkelstein et al. 1942). Other investigators have also reported good results with the treatment (Clark 1950, Garlick 1949), and have particularly stressed the rapidity with which otherwise intractable pain is relieved. Reports of controlled trials of the method are, however, lacking.

Method

We have tried to assess the therapeutic effects of continuous intragastric milk drip by means of a controlled trial. The investigation was conducted in three parts, which were similar in general outline but differed in detail in the administration of the drip and in the use of ancillary treatments. In each part of the investigation patients with fresh gastric ulcers were admitted to hospital, and then, if considered clinically suitable for inclusion in the trial, they were divided at random into two groups. Patients in one group were kept in bed and given a standard medical régime, while patients in the other group were treated in the same way but were also given a course of milk drip.

Parts A and B of the investigation were carried out in the course of a long-term research into the treatment of gastric ulcer. In these parts the two main treatment groups were further divided into subgroups of four patients, and each member of a subgroup was allocated at random, in a similar way, one of four combinations of two ancillary treatments, thus: (1) treatment X and treatment Y, (2) treatment X alone, (3) treatment Y alone, or (4) neither additional treatment. With this experimental design it is possible to assess the effect of three forms of treatment on the same group of patients. The results obtained with milk drip can be compared directly with the results obtained without milk drip, since both groups are comparable in respect of the proportion of patients receiving ancillary treatment. Similarly the results obtained with each of the ancillary treatments can be compared with the results obtained in the corresponding control groups of patients who did not receive them. Possibly the different treatments might have a synergistic effect on one another, so that although no effect was produced by one alone an effect might be produced by two or more in combination. The existence of such an effect can, however, be recognised from inspection of the results, and if present can be allowed for in the analysis. Details of the type of patient admitted to the trial, of the method of allocation to the treatment groups, and of the basic method of treatment, apart from the special methods under investigation, are described in a previous paper (Doll and Pygott 1954).

In *part A* of the investigation the main ancillary methods of treatment were the administration of 'Robaden' and of cabbage-juice. Another treatment used in a small group of patients was the routine administration of atropine (dry extract of belladonna gr. $^1/_3$ in pill form three times a day).

In *part B* of the investigation the additional forms of treatment consisted in the substitution of a normal hospital diet, less fried food, for the standard "basic" and "convalescent" gastric diets (Doll et al. 1956), and advice to smokers to stop smoking. The results obtained with robaden and with cabbage-juice and the results obtained by varying the standard diet have been reported separately (Doll and Pygott 1954, Doll et al. 1956). These treatments appeared to have no effect on the rate of healing of the ulcers. Insufficient patients have been treated with atropine, or by advice to stop smoking, to enable any conclusion to be reached about their value. No suggestion of any "interaction" has been observed between them and treatment with milk drip, and, in view of the way in which the investigation was designed, it is believed that any effect attributable to them can be ignored in making the comparison between the patients who were given milk drip and those who were not.

In *part C* of the investigation no other ancillary treatment was under investigation, and all patients in both drip and control groups were given a modified Meulengracht diet; patients in the control group were given, in addition, 4 g. of an alkaline powder every 2 hours during the day.

The alkaline powder comprised: sodium bicarbonate 3 parts, calcium carbonate 3 parts, light magnesium carbonate 3 parts, bismuth carbonate 1 part.

The results of treatment were assessed subjectively by recording the patient's description of his symptoms, and objectively by measuring the change in the size of the ulcer niche. A barium-meal examination was made immediately after the patient's admission to hospital and

* We regret to have to record that Dr. Price died on Nov. 28.—Ed. L.

2–4 days before the specific treatments were instituted. A second barium-meal examination was made after the completion of the courses of treatment, exactly 4 weeks after the first examination. The method by which the size of the ulcer niche was estimated, and the precautions taken to ensure, so far as possible, that the results of the radiographic examinations before and after treatment were comparable, have been described previously (Doll and Pygott 1954).

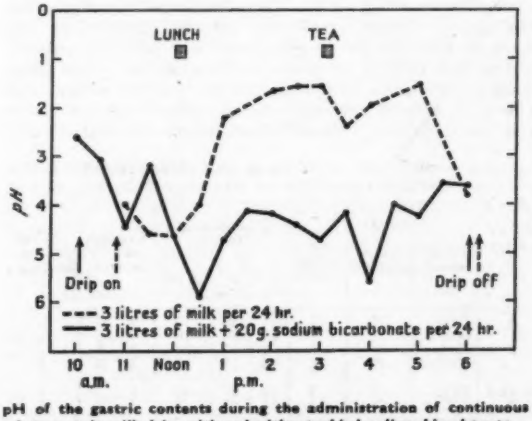
Administration of Milk Drip

The ordinary apparatus used for other forms of drip infusion was connected to a piece of thin rubber tubing, which was passed into the stomach through the nose or, if preferred by the patients, through the mouth. Surgical drainage tubing $^1/_{32} \times {}^1/_{16}$ in. was used instead of a Ryle's tube because it was thinner, more pliable, and more readily tolerated by the patient. The tube was kept in the stomach for the whole period of 24-hourly administration of the drip, save that patients were allowed to remove it for half an hour after breakfast when they got up to wash. Most patients, however, preferred to disconnect the tube from the drip apparatus and to keep it in situ. The same meals were served to patients on the drip as to the control patients not on the drip, and all were encouraged to eat as much of the meals as they could.

In *part A* of the investigation patients on drip were given by this method 6 pints of milk every 24 hours for 2 weeks; the daytime drip was then stopped and they were given 2 pints of milk by drip at night only for a further period of 10 days. In *part B* the same course was given but sodium bicarbonate was added to the milk. In *part C* the alkalinised milk was given day and night for 3 weeks and the period on night drip only was omitted.

The Addition of Alkali

The primary object of milk drip treatment is to reduce the acidity of the gastric contents to such a level that the peptic activity of the juice is eliminated over the whole of the 24 hours. To be certain of doing this the pH must be raised to a level of about pH 4. In fact, milk given continuously between meals does not generally have this effect, and a considerable amount of alkali has to be added before a satisfactory level can be ensured (see figure). Observations in the medical unit at St. Mary's Hospital showed that in patients with gastric ulcer the addition of 20–40 g. of sodium bicarbonate to the daily ration of milk was usually sufficient, but that in a few such patients (3/15) a daily dose of 60–160 g. was necessary. Patients with duodenal ulcer generally required 80–100 g. (Price and Sanderson 1955).



pH of the gastric contents during the administration of continuous intragastric milk drip, with and without added sodium bicarbonate.

TABLE I—COMPARABILITY OF PATIENTS ON ADMISSION WITH REGARD TO PRESENCE OF PAIN, BODY-WEIGHT, AND SIZE OF ULCER

Characteristic	Part A		Part B		Part C		Whole trial*	
	Drip	Control	Drip	Control	Drip	Control	Drip	Control
Pain on admission:								
Present ..	30	27	21	24	..	..	51	51
Absent ..	10	13	11	8	..	..	21	21
Initial weight:								
Under 7 st.	5	0	2	3	..	..	7	3
7 st. – ..	4	11	7	8	..	..	11	19
8 st. – ..	12	6	9	6	..	..	21	12
9 st. – ..	8	12	2	4	..	..	10	16
10 st. – ..	6	6	7	4	..	..	13	10
11 st. + ..	3	2	3	6	..	..	6	8
Not recorded	2	3	2	1	..	..	4	4
Av. all patients (st., lb., oz.)	8, 11, 12	9, 1, 3	8, 13, 5	9, 0, 11	..	..	8, 12, 8	9, 0, 15
Initial size of ulcer niche (sq. mm.):								
10–24 ..	7	15	10	7	0	0	17	22
25–49 ..	16	12	7	9	0	4	23	25
50–99 ..	10	5	6	8	4	2	20	15
100 + ..	7	8	9	8	6	4	22	20

* Data for the presence of pain on admission and for the initial weight are not available for part C of the trial.

van Goidsenhoven et al. (1954) have shown that, although well-marked chemical alkalosis may develop, doses of sodium bicarbonate of this order may safely be given to patients with peptic ulcer for periods of up to 3 weeks, so long as there is no evidence of pyloric stenosis, renal failure, or cardiac failure.

The present investigation was started before the work of van Goidsenhoven and his colleagues was completed, and in *part A* milk drip was given alone without the addition of alkali. In *parts B and C* a routine dose of 40 g. of sodium bicarbonate a day was added to every 6 pints of milk. It was realised that this dose would not produce the desired degree of neutralisation in all cases, but it was chosen in order to assess the therapeutic effect of a standard dose which could be given routinely in the absence of facilities for frequent estimation of the pH of the gastric contents. In *part C* two patients received larger doses (80 g. and 140 g. a day) because their pain was not controlled on the smaller doses. In *parts B and C* of the investigation patients in whom there was evidence of pyloric stenosis or of important renal disease were considered unsuitable for treatment with the alkalinised drip and were excluded from the trial.

Initial Comparability of Patients

In the absence of certain knowledge of the clinical features which affect prognosis (Doll and Pygott 1952, 1954), the only precautions taken to ensure that the patients given the different treatments were comparable before treatment was started were: (1) the exclusion from the trial of patients who had been treated previously; and (2) the allocation of the specific methods of treatment for each patient at random. The results of treatment have been assessed by recording the change in size of the radiographic ulcer niche, the change in the patient's weight, and the duration of the patient's symptoms. The initial comparability of the patients in the different groups with respect to the characteristics immediately relevant to these measures is evident from table I, which shows that:

(1) Equal proportions of the patients on drip and not on drip continued to complain of pain on admission (51/72 in each case).

(2) The average initial body-weight was somewhat lower in the drip series. The effect of this difference is considered later, in the analysis of the results.

(3) Rather more of the patients in the control series had very small ulcers (22/72, compared with 17/72). Complete

healing is more likely when the ulcer is small; but an increase in the size of the ulcer is also commoner in small ulcers, so the average amount healed, expressed as a percentage of the initial size, is practically the same as for large ulcers. The difference between the initial sizes of the ulcers in the treated and control groups is not great, and it is unlikely to have materially affected the results.

Results

The results are summarised in tables II–IV. Table II shows, for each of the main groups, the numbers of patients in whom the ulcer had completely or partly healed after a month's treatment and the average amount healed, expressed as a percentage of the initial size of the ulcer, for the whole group. In each part of the investigation the proportions of ulcers which healed completely in a month were similar for the patients on milk drip and for the control patients not on milk drip; in all parts taken together the proportions were identical (20/82). In parts B and C of the investigation (in which alkali was added to the milk) the proportions healed by two-thirds or more were also similar (27/42, compared with 28/42), and so were the average amounts healed.

TABLE II—PATIENTS GIVEN MILK DRIP AND CORRESPONDING CONTROL PATIENTS: RESULTS OF TREATMENT ASSESSED RADIOGRAPHICALLY

Part of trial	Treatment	No. of patients	No. of patients in whom niche was:				Average amount healed (%)
			Healed	Two-thirds or more healed	Less than two thirds healed	Larger	
A	Drip	40	10	17	9	4	69·7
	Control	40	9	8	16	7	50·7
B	Drip	32	8	11	13	0	69·5
	Control	32	8	13	9	2	65·8
C	Drip	10	2	6	2	0	80·2
	Control	10	3	4	3	0	82·8
All parts	Drip	82	20	34	24	4	70·9
	Control	82	20	25	28	9	60·5

In part A (in which no alkali was added), on the other hand, more ulcers healed by two-thirds or more among the patients on milk drip than among the control patients not on drip (27/40, compared with 17/40). In view of the fact that the difference appears in only one of the three parts of the trial, that the response to the drip in part A was no better than in parts B and C, and that the response to treatment in the control group was appreciably worse than in parts B and C, it seems most likely that the difference was due to an unfortunate play of chance in the selection of patients for the control group.[1]

Table III shows the effect of treatment as assessed subjectively by the patients' symptoms in parts A and B of the investigation: detailed records were not kept in part C. More patients on milk drip were completely free of pain than in the control group not on milk drip (36/72, compared with 25/72); but the difference is not large and could reasonably be attributed to chance ($\chi^2 = 3{\cdot}44$, $n = 1$, $0{\cdot}05 < P < 0{\cdot}10$). The measure of symptomatic relief shown in table III is, however, not a sensitive one and the impression was obtained that pain, when present, became less severe and less frequent immediately after the drip was instituted. Several patients on drip who complained of pain, complained of it only during the periods when the drip was stopped or when the drip bottle ran empty. 2 patients in part C of the trial continued to have pain when given the standard milk-alkali mixture. The gastric contents in these patients were found to have an acidity below pH 3·5 while they were on the drip, and the amount of alkali was, therefore, increased. Freedom from pain was eventually achieved with daily doses of 80 and 140 g.

1. Considered as the results of a single trial, the difference between the proportions 27/40 and 17/40 is statistically significant ($\chi^2 = 5{\cdot}05$, $n = 1$, $P = 0{\cdot}03$). The trial was, however, one of a set of three, and in these circumstances the standard level of significance is not appropriate. In any set of three trials, one or more will show a difference attributable to chance with a probability of as little as 0·02 once in 20 times; and 0·02 should, therefore, be taken as the appropriate level of significance for the results of one of the trials taken alone.

TABLE III—PATIENTS GIVEN MILK DRIP AND CORRESPONDING CONTROL PATIENTS: RESULTS OF TREATMENT ASSESSED SYMPTOMATICALLY

Part of trial	Treatment	No. of patients	No. of patients:		
			Pain-free	With occasional pain	With daily pain for a week or longer
A	Drip	40	21	9	10
	Control	40	15	16	9
B	Drip	32	15	14	3
	Control	32	10	15	7
A and B	Drip	72	36	23	13
	Control	72	25	31	16

Patients on the drip tended to gain weight more rapidly than the control patients; this was particularly true of patients on alkalinised drip. Weight changes after 1 month's inpatient treatment are shown in table IV. Data for 3 patients have been excluded because the presence of major intercurrent disease is likely to have affected them (1 patient on drip in part A with generalised dermatitis and 2 control patients in part A with pulmonary tuberculosis); adequate records for 5 others are missing. The differences between the numbers of patients gaining different amounts of weight in the two treatment groups are statistically highly significant (parts A and B taken together, $\chi^2 = 30{\cdot}26$, $n = 3$, $P < 0{\cdot}001$). Gain in weight tended to be greater for patients with a low initial weight, and on the average the patients on drip had a lower initial weight (table I). This, however, cannot have accounted for the results. The initial difference between the series is eliminated if the 10 patients who weighed under 7 st. are excluded; the average initial weight in both series is then 9 st. 2 lb. 11 oz., and the average gain in weight is 6 lb. 14 oz. for the drip series and 3 lb. 6 oz. for the control. The greater gain in weight may have been partly due to water retention, particularly among the patients on alkalinised drip. The secondary fall which follows the cessation of treatment with large doses of fluid and alkali was illustrated by van Goidsenhoven et al. (1954). In the present investigation, however, the final weight was recorded, not immediately after the period on continuous drip, but at the end of a subsequent period of 10 days during which the drip was confined to 2 pints of milk at night only. No records are available for the weight a week or so after all treatment had been stopped, but nearly all patients were weighed (as outpatients) 2–3 months after discharge. These outpatient records show that the average increase in weight over the initial inpatient record was still 15 oz. more for patients who had been treated with milk drip than for the control series, and 1 lb. 5 oz. more if patients with an initial weight of under 7 st. are excluded. These differences are not statistically

TABLE IV—PATIENTS GIVEN MILK DRIP AND CORRESPONDING CONTROL PATIENTS: CHANGES IN WEIGHT AFTER ONE MONTH

Part of trial	Treatment	No. of patients	No. losing weight	No. gaining weight			Average gain in weight		No. of patients excluded
				0–4 lb.	5–9 lb.	10 lb. +	lb.	oz.	
A	Drip	38	2	11	20	5	5	13	2
	Control	37	6	21	10	0	2	15	3
B	Drip	30	0	2	17	11	8	6	2
	Control	31	4	10	17	0	4	3	1
A and B	Drip	68	2	13	37	16	7	0	4
	Control	68	10	31	27	0	3	8	4

significant, but, in the absence of more detailed data, it seems reasonable to conclude that some of the increase in weight associated with milk-drip treatment was probably due to an increase in body-tissue.[2]

Side-effects

The drip treatment was carried out without difficulty. The great majority of patients grew accustomed to the presence of the tube after a few hours, and although a few continued to find it unpleasant the discomfort was in no case so great that the treatment had to be abandoned. Several patients complained of mild heartburn which they had not noticed previously and which ceased when the tube was removed. (In 1 patient, not in the present series, diarrhœa appeared to be produced by the drip and was sufficiently severe to necessitate abandoning the treatment.)

In none of the patients on alkalinised drip did renal failure develop, nor were any symptoms observed which could be attributed to alkalosis specifically. The biochemical effect of prolonged administration of such large doses of sodium bicarbonate in man is discussed by van Goidsenhoven et al. (1954).

Discussion

The failure to demonstrate a beneficial effect on the healing of gastric ulcers with continuous intragastric milk drip is disappointing. Even the addition of alkali to the milk in sufficient quantity for the acidity of the gastric contents to be kept, in the majority of patients, above pH 4 throughout the 24 hours failed to have a recognisable influence on the healing process. It is, of course, possible that the continuity of the drip was not maintained with the same exacting attention to detail under conditions of routine treatment as in the course of the experimental observations which have been referred to. Regular tests of the pH of the gastric contents were not made during the trial, and in some or all of the patients the acidity may occasionally have fallen temporarily to below pH 4. Nevertheless such occasions cannot have been of more than short duration in the majority of the patients in parts B and C of the trial, and it is unlikely that any more complete neutralisation has been achieved in any other reported series. It would seem, therefore, that, unless very short periods of exposure are effective, peptic digestion cannot be of prime importance in maintaining the activity of a gastric ulcer: and that, under conditions of bed rest in hospital, further treatment aimed at the complete elimination of peptic digestion is unlikely to help the ulcer to heal.

It is not suggested that continuous neutralisation does not relieve the pain of peptic ulcer. There is good evidence that, when an "active" ulcer is present in the stomach, pain can often be reproduced by instilling an acid fluid, and conversely that pain, when present, can be abolished constantly by withdrawing the gastric contents or by their neutralisation (Palmer 1927, Bonney and Pickering 1946). The present investigation confirms the impression that pain is relieved more readily by a continuous milk drip than by the standard medical régime, and we therefore accept intragastric drip as a useful adjunct to the treatment of those rare cases in which the pain does not respond to rest in bed.

The present data throw no light on the value of milk drip in the treatment of duodenal ulcer. Acid secretion is usually increased in quantity in patients with a duodenal ulcer, while it is usually close to normal in patients with gastric ulcer (Ihre 1947, James and Pickering 1949). It is, therefore, possible that peptic digestion may play a more important rôle in the production or maintenance of the activity of duodenal ulcers, and conclusions drawn from the treatment of patients with a gastric ulcer cannot be applied automatically to the treatment of patients with a duodenal ulcer.

2. For all cases $t = 0{\cdot}88$, $n = 131$, $P > 0{\cdot}10$; excluding cases with an initial body-weight of under 7 st., $t = 1{\cdot}24$, $n = 121$, $P > 0{\cdot}10$.

The more rapid gain in weight obtainable with a milk drip may be, in some circumstances, a positive indication for its use.

Summary

The value of continuous intragastric milk drip in the treatment of gastric ulcers has been investigated by means of a controlled trial which covered 164 inpatients in two hospitals. 82 received the drip treatment; and 82, who were otherwise treated in the same way, did not. In 40 patients the drip consisted of 6 pints of milk a day without any added alkali; in 40, 40 g. of sodium bicarbonate was added to each 6 pints of milk; in 2 the dose was increased to 80 and 140 g.

The proportion of ulcers which healed in the course of a month was identical in the two treatment groups (20/82). The average amounts healed, expressed as a percentage of the initial size of the ulcer, were also similar.

The impression was received that pain was relieved more rapidly with milk drip than without it; and an alkalinised milk drip is considered a useful adjunct to the standard treatment in patients whose pain persists after rest in bed.

Patients given milk drip gained, on the average, more weight than patients not given the drip (7 lb. 0 oz., compared with 3 lb. 8 oz.), and a slight advantage (15 oz.) was still preserved 2–3 months after discharge.

We are grateful to Dr. F. Avery Jones and to Prof. G. Pickering for their advice and for allowing us to treat patients referred to their clinics; and to the staff of the gastro-enterological and radiological departments of the Central Middlesex Hospital and of the medical unit and radiological department of St. Mary's Hospital for help in the management and examination of the cases. One of us (A. V. P.) was working with a grant from St. Mary's Hospital research fund.

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CONTINUOUS INTRAGASTRIC MILK DRIP IN THE TREATMENT OF UPPER GASTRO-INTESTINAL HÆMORRHAGE

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FURTHER hæmorrhage in patients who are being treated in hospital for hæmatemesis and melæna is a danger signal. A continuous intragastric milk drip has been claimed to hasten the healing of peptic ulcer (Winkelstein 1949). An indwelling Ryle's tube has been recommended in the management of upper gastro-intestinal hæmorrhage to facilitate the early diagnosis of re-bleeding (Chandler and Watkinson 1953). If either of these suggestions is well founded deaths from hæmatemesis and melæna might be prevented. These suggestions have been tested in a study described here.

Material and Method

In a series of 100 consecutive cases of gastro-intestinal hæmorrhage a Ryle's tube was passed to between marks

TABLE I—DISTRIBUTION OF CASES BY DIAGNOSIS AND AGE-GROUP

—	Milk drip (50 cases)	No milk drip (50 cases)
Diagnosis :		
Duodenal ulcer	18	18
Gastric ulcer	8	8
X-ray neg.	16	17
Postop. and miscellaneous	8	7
Age-group (yr.) :		
<50	21	21
50–69	17	22
70 +	12	7

II and III. Alternate patients were treated with a continuous intragastric milk drip of 6 pints of non-citrated milk each 24 hours; no sodium bicarbonate was added to the milk. Otherwise the patients were treated routinely by a purée diet, alkalis for symptomatic relief of pain sedation, blood replacement, and emergency operation if necessary. 3 patients, all aged 70 years, would not tolerate the tube. The following data were charted for 72 hours: results of hourly aspirations of the stomach, pulse-rate each hour, blood-pressure every 4 hours, and presence of shock, pallor, or overt bleeding.

Results

The final diagnosis and the distribution of cases by age-groups were used as criteria for assessing the comparability of the two groups (table I). There was a remarkably even distribution, except for slight weighting of the milk-drip series by a greater number of patients over 70 years of age.

The value of a milk drip was assessed by comparing in the two groups the number of deaths; the number of massive further hæmorrhages as shown by alteration in the pulse-rate and blood-pressure, sweating, and overt hæmorrhage; the number of patients requiring emergency operation; and the number of patients in whom fresh blood was aspirated after previous aspirations that were clear or contained altered blood and in whom no other signs of hæmorrhage were noted ("tube re-bleeding"). The results are shown in table II.

There is no significant difference between the results obtained in the two groups. In only 1 case did aspiration

TABLE II—DEATHS, MASSIVE FURTHER HÆMORRHAGES, EMERGENCY OPERATIONS, AND "TUBE RE-BLEEDING"

—	Milk drip (50 cases)	No milk drip (50 cases)
Death	5	3
Massive further hæmorrhage	12	15
Emergency operation	7	4
"Tube re-bleeding"	2	8

give warning of massive hæmorrhage, and this was 45 minutes before other signs appeared. In all other patients signs developed simultaneously with the aspiration of blood. In 10 patients mild re-bleeding, as shown by aspirations, occurred in the absence of massive re-bleeding.

Discussion

There is no evidence that a milk drip prevents recurrence of massive hæmorrhage. The series described by Ashby and Whitehouse (1955) suggested that a milk drip tends to diminish the duration of bleeding; but the evidence is open to criticism since a retrospective control group was used. Ashby and Whitehouse claimed "early reassurance, confidence and freedom from shock" among patients treated with a milk drip; but this is not substantiated by the present series.

I have not found an indwelling Ryle's tube of value in giving warning of impending massive hæmorrhage after admission. If note had been taken of tube re-bleeding in this series there would have been many false alarms. It seems that massive re-bleeding usually occurs suddenly.

It has been suggested that a Ryle's tube might be useful in keeping the stomach empty of blood; but it does not have this effect after massive hæmorrhage, as anyone will agree who has attended an emergency partial gastrectomy and seen the large amount of clot which has to be evacuated from a dilated stomach. Even a large stomach-tube or duodenal tube has proved inadequate in such cases.

Summary

100 cases of upper gastro-intestinal hæmorrhage were managed with an indwelling Ryle's tube.

Alternate cases were treated with a continuous intragastric milk drip.

The two groups were found to be well matched for age and cause of bleeding.

The two groups did not differ in the incidence of massive further hæmorrhage.

An indwelling Ryle's tube is of little value in giving warning of an impending further massive hæmorrhage.

I thank Dr. F. Avery Jones for his encouragement and advice.

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THE ÆTIOLOGY OF CLEFT VERTEBRAL ARCH IN SPONDYLOLISTHESIS

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THE term "spondylolisthesis," in its wider sense, embraces all conditions in which the body of a lower lumbar vertebra, with or without an intact vertebral (neural) arch, is displaced forwards on the succeeding vertebra. The term thus used is not strictly in accordance with its literal meaning—i.e., "slipping vertebra." It was introduced by Kilian (1854) to denote a displacement forwards of the entire fifth lumbar vertebra.

Lambl (1858) described some cases of spondylolisthesis in which there was a breach in the bony continuity of the vertebral arch between the superior and inferior articular processes, and this part of the arch he appropriately called the pars interarticularis. In such cases of spondylolisthesis the body of the vertebra carries forward with it the pedicle, the transverse process, and the superior articular processes, while the inferior articular process, the lamina, and the spinous process remain in situ.

Most Continental workers now accept this bone lesion of the arch as an essential feature of spondylolisthesis, whereas English-speaking workers prefer the more comprehensive application of the term. It is in accordance with such an interpretation of spondylolisthesis that Newman (1955), in an analysis of 204 personal cases, remarks that only about half of them showed a breach in the arch.

The present non-clinical contribution to the literature of spondylolisthesis is concerned only with those cases in which there is a cleft in the vertebral arch, and it is submitted as additional evidence that such a lesion, when present, does not result from a failure of fusion between two centres of ossification. This hypothesis has

in the past received considerable support and appears to stem from the claims of Schwegel (1859) and Rombaud and Renault (1864) that there are double ossific centres in each half-arch. Various other workers have supported the idea of double centres, but no convincing evidence for them has ever been advanced.

All critical observations have substantiated the view that a cleft in the pars interarticularis is the result of fracture of an ossified arch.

Rowe and Roche (1953) have produced convincing evidence in support of this assertion: in an analysis of 509 stillborn and neonatal cadavers (73 of their own and the remainder previously published) they did not find a single instance of a breach in the bony continuity of the vertebral arch, although in adults the generally accepted figure of such a breach in the arch of the fifth lumbar vertebra is about 5%. Their analysis also showed that the 5% prevalence is attained by the twentieth year and thereafter remains fairly constant.

Stewart (1953), however, reports from the examination of 786 skeletons of Alaskan natives that there is in them an increase in the incidence of the defect during adult life, and he believes that this is mainly due to the combination of unusual postural stresses and a high accident-rate.

We believed that a study of ossification in the vertebral arch might contribute towards a solution of the ætiology of a cleft in the pars interarticularis; and, since spondylolisthesis is restricted to the lumber region, the observations recorded here are limited to that part of the vertebral column.

The critical stages in the early ossification of the vertebral arches of the lumbar vertebræ are while the fœtus increases in its crown-rump length from 75 mm. to 130 mm. Our observations were made on serial sections of seven fœtuses between these lengths, and to clarify the exact position of the ossific process three reconstructions were made. Observations were also made on other younger and older specimens to verify certain findings.

Observations

In each half of the vertebral arch a well-marked sequence of changes take place which are always most advanced in the first lumbar vertebra and least so in the fifth vertebra in any one fœtus. The pattern of ossification in the arch of the fifth lumbar vertebra differs in no way from that in the arch of any other lumbar vertebra. The vertebral arch of the fifth lumbar vertebra in a fœtus about 70 mm. long is formed of cartilage, but by the 75-mm. stage a small region of the cartilage in the anteromedial part of the pars interarticularis has become calcified. At this stage the cartilage of the vertebral arch is avascular and in this feature differs from the bodies of the vertebræ, which show numerous vascular canals before ossification. These canals show as clear spaces in the bodies of the vertebræ seen in fig. 1. The calcification in the arch is indicated, in sections stained with hæmatoxylin and eosin, by the deep purple of the intercellular matrix and by an increase in size of the lacunæ containing the cartilage cells, whose cytoplasm has become swollen and vacuolated.

After this localised calcification has taken place, a thin lamina of subperiosteal bone is laid down on the anteromedial aspect of the pars interarticularis directly overlying the calcified cartilage in a manner that is essentially similar to the first deposition of bone in the shaft of a long bone. Thereafter the calcified cartilage is invaded by blood-vessels and partly destroyed and excavated. With increase in size calcification of the matrix extends in all directions from its initial focus, upwards and downwards into the roots of the articular processes, forwards into the pedicle, and backwards and laterally towards the posterior and lateral aspects of the pars interarticularis, and gradually reaches the perichondrium in these regions. Wherever the calcification reaches the surface of the cartilage the perichondrium assumes an osteogenetic function, and subperiosteal bone is deposited.

The sequence of this process may be seen, in some measure at least, in a single sagittal section of the lumbar vertebræ of a 101 mm. fœtus (figs. 1 and 2). This section passes through the lateral part of the body of each vertebra, the pedicle, the superior and inferior articular processes, and the pars interarticularis. The process of ossification has just begun on the anterior aspect of the

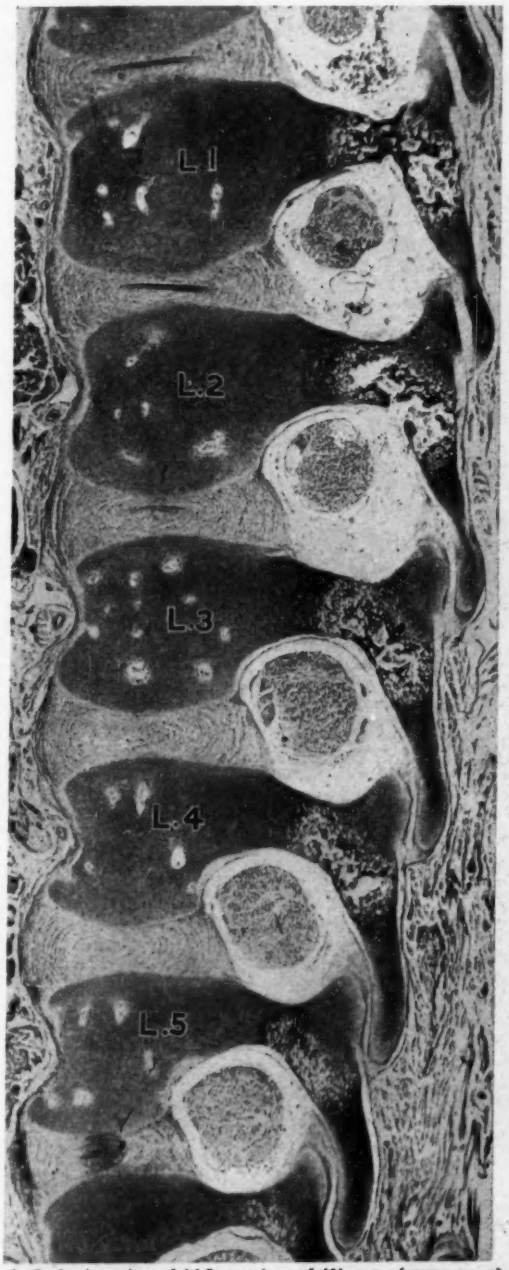

Fig. 1—Sagittal section of L1-5 vertebræ of 101 mm. (crown-rump) fœtus through bodies, pedicles, superior and inferior articular processes, and pars interarticularis. Ossification is most advanced in L1 vertebra and least in L5. (×10.)

pars interarticularis of the fifth lumbar vertebra, where the bone is seen as a dark lamina lying in front of the calcified cartilage (fig. 2*c*). In the first lumbar vertebra the process of ossification is much more advanced, and the lamina of bone has circumscribed the pars interarticularis; therefore in a sagittal section (fig. 2*a*) bone is seen on both the front and the back of this region. While the deposition of subperiosteal bone continues, there is massive excavation of the central cartilage of the pars interarticularis (fig. 2*a*), and this is as characteristic a feature of ossification of the vertebral arches as it is of ossification of the diaphysis of a long bone. Small islets of calcified cartilage remain, however, within the subperiosteal collar of bone, and upon these the primary medullary bone of the trabeculæ is laid down.

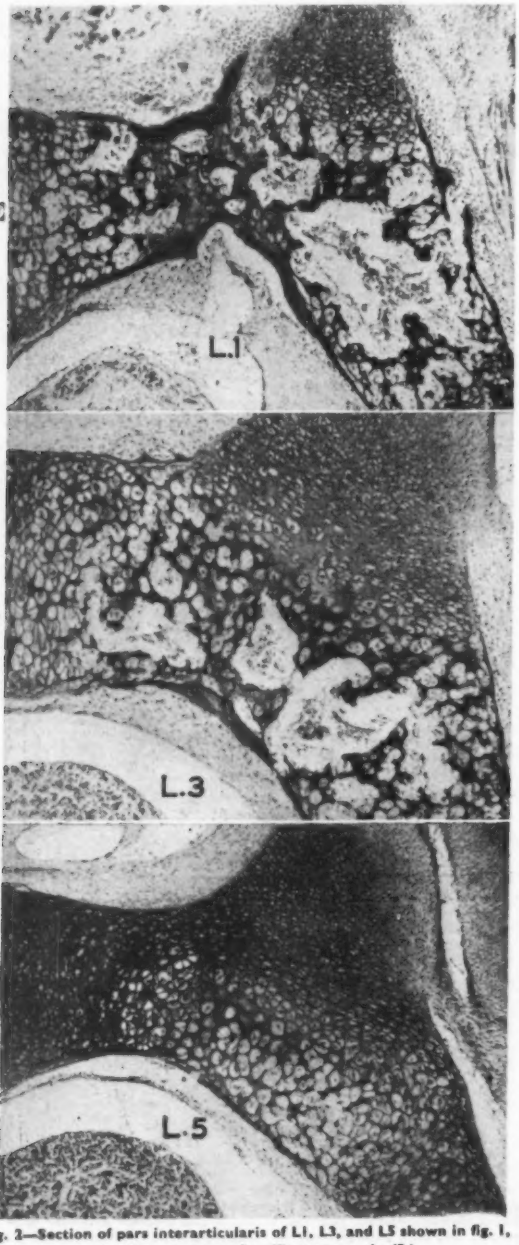

Fig. 2—Section of pars interarticularis of L1, L3, and L5 shown in fig. 1, showing sequence of ossific changes. (×45.)

Reconstructions of lumbar vertebræ of three fœtuses (75 mm., 93 mm., and 101 mm. long) show that the calcified cartilage, along with the first-formed bone in the pars interarticularis, together constitute a hemispherical mass. This is contradictory to the finding of Willis (1931), who states that the single centre is shaped like an hourglass, a form which, he suggests, may have given the impression to some workers that there are two separate centres in the arch.

By the time the fœtus has grown to a crown-rump length of about 130 mm. the ossification in the vertebral arch of the fifth lumbar vertebra has reached a stage comparable to that of the first vertebra in the 101-mm. specimen (fig. 2*a*). The pars interarticularis is represented by a relatively thin shell of compact bone through which pass numerous vessels. Within the primitive medullary cavity are islets of calcified cartilage on which bone is being deposited.

Sections through the pars interarticularis of older fœtal and postnatal vertebræ show great variations in the thickness of the cortical bone and in the density of the medullary trabeculæ in specimens of about the same age.

Conclusions

Our observations indicate that ossification in a vertebral arch closely resembles ossification in the diaphysis of a long bone. In both of them calcification of the cartilaginous matrix is followed by deposition of bone at the surface immediately beneath the periosteum, but only where calcified cartilage has come into apposition with the perichondrium. Thereafter ossification continues by thickening and extension of this subperiosteal bone, while the calcified cartilage enclosed and supported by this shell of bone is gradually removed. The bone of the medullary trabeculæ is, in the first instance, laid down on the small islets of calcified cartilage that temporarily persist. The one difference is that in a long bone the calcification of the matrix begins within the central part of the diaphysis, whereas in the vertebral arch it begins eccentrically on the anteromedial aspect of the pars interarticularis.

This pattern is opposed to endochondral ossification as typically seen when a secondary centre or centres of ossification appear within the cartilaginous end of a long bone to constitute an epiphysis. There one, two, or more ossific centres may appear within the substance of the cartilage, but there is no primary formation of surface bone as has been described in the ossification of the vertebral arch; nor can there be an accompanying massive destruction of the cartilage within a well-defined primary bony collar.

These observations are in striking contrast to the statements of Hitchcock (1940) referring to ossification of the vertebral arch: "This (the ossification) is preceded as in all endochondral ossification elsewhere by the invasion of vessels from the laminar arteries" and "The periphery of the isthmic (interarticular) region remains cartilaginous up to and after birth."

As long as Bardeen's (1910) statement is perpetuated that ossification in the vertebral arch is endochondral, and his figure (after Quain), showing this ossification within the substance of the cartilage of the arch, continues to be reproduced, so too will there be misapprehension about possible anomalies in the neural arch. Bardeen's statement that sometimes in the fifth lumbar vertebra there are two centres for the arch (for which he gives no authority) is in our opinion inconsistent with the manner in which the arch is ossified.

All our observations confirm that the whole pars interarticularis is involved in the sequence of changes

which take place, and that the process extends from its initial focus in the pars interarticularis to include the whole of the corresponding half of the vertebral arch. Furthermore, the bone is laid down as a continuous layer beneath the periosteum wherever calcification of the cartilaginous matrix has extended as far peripherally as the perichondrium. Friberg (1939), in photographs of reconstructions of fœtal vertebræ, shows that the first-formed bone is on the anteromedial aspect of the pars interarticularis, in a site almost identical with that which we have observed in our specimens. Friberg did not, however, refer to subperiosteal deposition of the first bone, nor did he draw what we believe to be important and pertinent conclusions from it. This formation of surface bone is accompanied by such a massive destruction of the underlying cartilage that to postulate that either one or two primary ossific centres appear in this very cartilage is tantamount to assuming that the pattern of ossification is different from that which has appeared so constantly in all our sections and bears a close resemblance to the ossification shown by Friberg (1939) in photomicrographs of fœtal vertebræ.

This pattern of ossification is basically opposed to the appearance of either single or double primary endochondral ossific centres within the vertebral arch, and this in turn is in full accordance with the failure of Rowe and Roche (1953) to discover a single instance of cleft vertebral arch in over 500 stillborn and neonatal cadavers. If a cleft vertebral arch is caused by a congenital factor, we believe that it is not due to two centres of ossification but to weakness in the bone of the pars interarticularis of the vertebral arch.

Summary

The pattern of ossification in the vertebral arch of the fifth lumbar vertebra is similar to that in the arches of other vertebræ.

The site of the initial ossification in the vertebral arch of the fifth lumbar vertebra is indicated by the calcification of the cartilage in the anteromedial part of the pars interarticularis.

The bone is first deposited subperiosteally and gradually forms a collar round the pars interarticularis.

The laying down of subperiosteal bone is accompanied by much excavation of the underlying calcified cartilage.

Ossification in the vertebral arch is not endochondral and does not appear to be consistent with double ossific centres.

Our sincere thanks are due to Mr. J. Brown, of this department, for the microscopic sections and photographs.

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"... If men value their liberty they are well advised to understand the customs and institutions in which it is grounded and they must be vigilant in its defence. But, though recognising it to be above price, they should no more make a fetish of it than a wise man does of his health. He learns the principles of hygiene, takes reasonable precautions against abuse, and then gets on with the important things of life which his health permits him to pursue."—*The Times*, Dec. 28, 1955, p. 7.

THE GENESIS OF THYROID ADENOMAS

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IT is generally accepted that both diffuse and nodular enlargements of the thyroid gland are ultimately due to alterations in the secretion or the activation of the thyrotropic hormone, no matter whether the primary cause is a goitrogenic agent, lack of goitre-preventing factors, or another, unknown, source of deficient synthesis of thyroid hormone ("inborn error of metabolism" of Hutchison and McGirr 1954).

Why, in one and the same gland, the increase tends to be local rather than uniform is not understood. For this reason we investigated the underlying conditions in hypothyroid goitres.

Material

The subjects of the study were two siblings, a boy aged 17 years (case 1) and his sister aged 12 (case 2), with familial sporadic cretinism and goitre, who have been reported in detail elsewhere (Zondek et al. 1955).

Both had very voluminous diffuse goitres in which five (case 1) and three (case 2) nodules, varying in size from that of large cherries to that of peaches, were embedded, and both showed the clinical picture of childhood myxœdema.

The administration of a total dose of 960 μg. (case 1) and 820 μg. (case 2) of tri-iodothyronine within eight and nine days respectively led to the disappearance of the myxœdema. The response of the goitres to therapy was, in both patients, consistent with the well-known fact that diffuse thyroid enlargements respond more readily than nodular ones: in case 1 reduction of the total volume of the thyroid gland was first noted after 240 μg. (two days) and in case 2 after 80 μg. (one day) of tri-iodothyronine, and the nodules started to decrease after 360 μg. (three days) and 520 μg. (six days) respectively.

Subsequently there was in both patients a striking decrease of the diffuse and nodular areas alike. In case 1 three of the five nodules were no longer palpable after 840 μg. of tri-iodothyronine (seven days); the fourth disappeared later under treatment with thyroid gland (7 g. in ten weeks); but the fifth, which at that time had shrunk to the size of a small hazelnut, subsequently remained stationary despite prolonged intensive treatment with thyroid. The three nodules in case 2 considerably decreased in size during treatment with tri-iodothyronine and, later, thyroid but, like the fifth nodule of case 1, did not disappear completely.

Present Investigation

After a state of clinical remission had been maintained for some time, both patients were allowed to relapse so that we might possibly find out how the release of the goitrogenic agent from the suppressive action of thyroid hormone would affect the structure of the thyroid gland.

Results

In case 1 a clinical relapse was accompanied by renewed and rather rapid formation of a goitre, which again was partly diffuse and partly nodular. Diffuse enlargement seemed to precede the formation of the nodules. Four nodules reappeared in the converse order of their disappearance. They occupied exactly the same sites as before treatment with thyroid. Their size had nothing to do with the rate and intensity of either their regression or their reappearance. All the nodules, including the fifth, which had never entirely disappeared, attained their former size within sixty-nine days after the withdrawal of therapy. Repeated administration of thyroid produced a response identical with that produced in the first therapeutic trial. Along with clinical remission the

four nodules in the same sites as those that disappeared under treatment with tri-iodothyronine and, later, thyroid again disappeared completely, so far as could be ascertained by careful palpation. The fifth nodule also behaved in the same manner as the one in the same site in the first therapeutic period: although reduced to the size of a hazelnut it did not disappear even after prolonged treatment with thyroid gland and was subsequently removed surgically. Histological examination (Dr. H. Ungar, of the Hadassah Medical School) showed a typical colloid adenoma surrounded by a thick fibrous capsule. There was no fibrosis or calcification within the adenoma tissue which might have accounted for its resistance to therapy.

In case 2 withdrawal of therapy caused both the diffuse and the nodular parts of the goitre to enlarge progressively. Renewed administration of thyroid produced considerable regression of the nodules, which, however, exactly as in the first therapeutic trial, did not subside entirely. One of them was removed and also showed the structural properties of a colloid adenoma, again without degenerative changes (Dr. Ungar).

Radio-iodine studies during the first period of observation showed in case 1 a total uptake of 14·3% by the thyroid gland after forty-eight hours. Nodular and diffuse areas behaved exactly alike, except that one nodule collected two or three times as much iodine as did the other tissues (Dr. A. Hochman, of the Hadassah Medical School). The more active nodule was one of the four which had completely regressed under treatment with thyroid—in other words, it responded to therapy and to its subsequent withdrawal exactly in the same manner as did the less active nodules. Conversely, the nodule which did not respond completely to therapy showed the same functional behaviour as the nodules which did respond.

Conclusions

On the strength of these observations we postulated that in case 1 the regression of the thyroid adenomas under treatment with thyroid was independent of their functional state. Rather must we assume that local differences in responsiveness to the goitrogenic agent—presumably the thyrotropic hormone—accounted for the formation, size, and possibly the nature of the nodules. Similar reasoning appears to apply to case 2, in which the nodules did not disappear completely even after prolonged and intensive treatment with thyroid. It seems that a regional increase in sensitivity to the goitrogenic stimulus may go so far as to render the tissue refractory to even large doses of thyroid hormone, whereas in other areas of the same gland much smaller amounts suffice to counteract the stimulating agent.

According to the peripheral theory of Zondek (1924) the quality and intensity of hormonal activity is modified by the state of responsiveness of the peripheral target-organs, in which respect the electrolytic conditions of the cell-surfaces were assumed to play an important part (Zondek and Reiter 1923, Zondek and Ucko 1924–26). This conception apparently also holds good for endocrine structures in so far as they represent hormonal target-organs.

Two questions have not yet been answered: (1) will it be possible to discover the nature of those inherent factors which determine the local responsiveness of the thyroid tissue to the goitrogenic stimuli? and (2) may the administration of thyroid substances which suppress the goitrogenic stimuli succeed not only in reducing the volume of nodules but also in protecting them from disorderly growth—i.e., malignant degeneration? On the strength of our observations this hypothesis is advanced first of all for adenomas within hypothyroid glands, but it may also apply to euthyroid (non-toxic) adenomas. Our deduction is consistent with the results of experimental and isolated clinical observations to the effect that the administration of anti-thyroid drugs may produce, especially under hypothyroid conditions, malignant, even metastasising, thyroid neoplasms (Griesbach et al. 1945, Purves and Griesbach 1947, Money and Rawson 1947, Fodor et al. 1948, Bielchowsky et al. 1949, Herrmann 1951, Boulet et al. 1953).

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"OEDÈME BLEU"

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> "I likewise saw a man who could not move his hand, it being to his thinking dead."
>
> VALENTINE GREATRAKS, 1666.

WE draw attention here to Charcot's *oedème bleu des hystériques*, a not uncommon form of "hysterical" affection of joints simulating medical or surgical disease, which is rarely mentioned nowadays in published reports. We describe two cases (one following injury), neither of which had been recognised. They had been referred to one of us (J. P. R.) with a view to sympathectomy or amputation.

Charcot (1890) observed that this disorder is characterised by non-pitting œdema, coldness, purplish discoloration, altered sensation, often total anæsthesia, paresis, and contracture of either hand or foot (fig. 1); electrical reactions remain normal. He and Pierre Marie (1892) added: "trophic derangements . . . among them blister-like eruptions." Pain is sometimes, but not always, a feature.

Although known by Charcot's name, Brodie (1837) had previously referred to "several cases of this singular affection of the hand and wrist," and Paget (1873) had given a detailed description of it as an example of "nervous mimicry" of organic disease.

Hysteria and Hysterical

It is impossible to discuss *oedème bleu des hystériques* without glancing at the history of the term "hysterical." This term has impeded the understanding of mental disorders from earliest times. It was once used synonymously with insanity in general, and for "fits" of every kind; and latterly it has been used for somatic symptoms of psychological origin. Yet it has resisted all attempts at elimination:

> "The name hysteria should be abolished. For it is absurdly derived and . . . used as a term of reproach, is worse than absurd . . . hysterical is taken by many people . . . that she is silly, shamming, or could get well if she pleased . . . call them anything . . . but hysterical" (Paget 1873).

Reynolds (1872) pointed out that "hysterical" meant widely differing things to different people:

"'nervous temperament' . . . a mood or disposition of disordered function which cannot conveniently be placed elsewhere . . . simply conveys a doubt as to what is the matter . . . a prevailing conviction that it is nothing very serious."

Fig. 1—Charcot's original illustration.

Allbutt (1869) was "quite sure that . . . by the use of the word hysteria, the medical man not only injured the patient, but damaged his own power to cure."

Unfortunately Charcot elevated hysteria to a disease entity and assembled under *la grande hystérie* a medley of neurological and psychiatric conditions, including epilepsy, hemiplegia, catatonic schizophrenia, malingering, and even fraud. He also introduced the misleading factor of hypnotic suggestibility as the hallmark of hysteria.

Pathology and Psychopathology

Babinski, in a series of publications in one of which (1896) he described the plantar reflex, demolished Charcot's "hysteria" by demonstrating that lack of diagnostic precision was responsible for purely neurological conditions being termed hysterical. But he accepted Charcot's idea that hysteria was due to suggestion; hence only body function subservient to the will could be considered hysterical. In a comprehensive survey, he and Froment (1918) suggested calling autonomic symptoms such as œdema "reflex neuroses" in order to emphasise their independent, organic origin, although they agreed that these "reflex neuroses" were usually associated with disturbances of voluntary function, such as paresis, and cleared up with psychotherapy.

Roussy and Lhermitte (1918) give the most acceptable explanation of vasomotor and trophic changes found in cases of *oedème bleu*:

"Vasomotor symptoms, fall of the temperature, cyanosis of the paralysed extremities, hyperidrosis, œdema, etc., are the result of functional inactivity, as is proved by their rapid disappearance, when an hysterical paralysis or contracture is cured by psychotherapy."

Today, because we still do not understand how the mind produces somatic symptoms, we are inclined to disregard mental factors. Reynolds (1869) had rightly predicted that, if their psychological origin is ignored, such conditions "are theoretically driven into the sympathetic corner, whereas there is nothing to prove that the vaso-motor or sympathetic system . . . is primarily at fault."

Paradoxically, the advent of psychiatry as a specialty in its own right has encouraged this trend; whereas in the past surgeons and physicians dealt with both the body and the mind of their patients, and made valuable psychological contributions, they now leave everything concerning the mind to psychiatrists. But the most skilful part—diagnosis and selection of patients—remains their responsibility. The psychiatrist labours under similar difficulties: he has not the clinical opportunity of comparing organic with non-organic symptoms; and as his training centres largely on mental phenomena, he is ill equipped to deal with patients whose symptoms masquerade as bodily disease. Thus patients with somatic symptoms of psychological origin often fall between two stools.

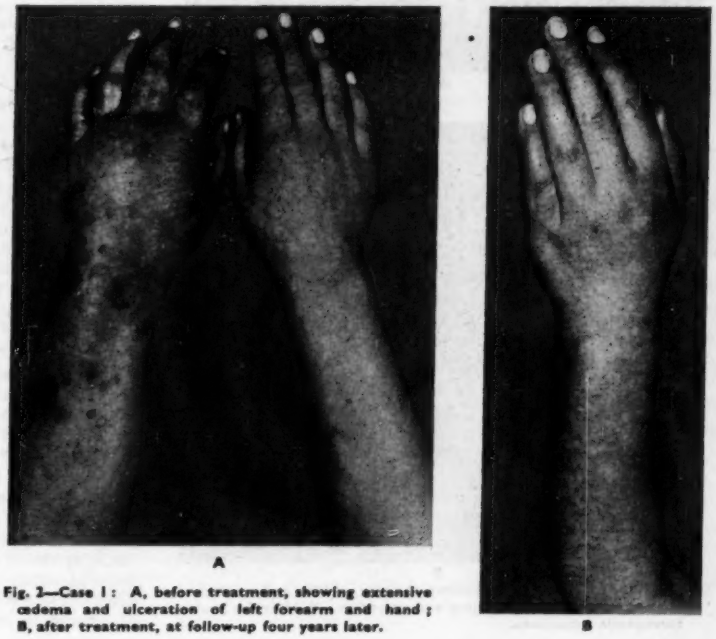
Case-reports

Case 1.—A woman, aged 22, shop assistant. Left arm in sling; forearm and hand much swollen; skin purplish-red, tight, shiny, with several deep ulcers (fig. 2A); movement and sensation uniformly reduced; severe pain at times; reflexes, electrical reactions, radiographs, arteriogram, phlebogram, and lymph-flow normal.

History.—Aged 2 adopted by mother's sister; disturbed childhood: temper trantrums and sleepwalking. In 1946, aged 15, after playing in snow warmed hands in front of fire. Both hands red and tight; left appeared swollen. Sent to doctor, treated with penicillin and hot bathing. Swelling gradually increased, spread up forearm; skin discoloured, ulcers appeared on extensor surface. In 1948 admitted to hospital for seven weeks; arm in plaster; penicillin injections. Discharged unimproved; outpatient physiotherapy for several months. Condition deteriorated.

In 1949 referred to one of us (J. P. R.) regarding advisability of sympathectomy or amputation. Transferred to psychiatrist (I. M.) as hysterical paresis.

Treatment and progress.—Seen eighteen times in eight months. Hostile to psychiatric approach: "It is not imagination," "I have only been sent for consent to amputation," "Why should I have had so much treatment, if nothing is wrong with my arm?" Clamoured for amputation, complained limb was ugly and disfiguring, but unconcerned about loss of function. Bitter about adoption; hostile towards mother who had kept brother. "If I had a child I would not get rid of it." Heard of adoption from other children when aged 3, remembers being unable to believe or understand it. Consciously devoted to foster-mother, although she was strict, fussy, and possessive. During psychotherapy realised she was longing for own mother, whom she called aunt: "Perhaps I don't know all the circumstances of the adoption." Wondered whether foster-mother had turned her against own mother; accused her of holding on to her. Her confused feelings and insecurity were expressed in a recurrent dream: she was



A B

Fig. 2—Case 1: A, before treatment, showing extensive œdema and ulceration of left forearm and hand; B, after treatment, at follow-up four years later.

going to a funeral of either mother or foster-mother; she could never tell which. Referring to her "two mothers," she said: "if only I could cut myself off from this eternal muddle." Later used the same words about her arm, which she wanted "cut off." When it was pointed out that she wished to do with the arm what she had not achieved with her family background, the arm greatly improved; sling and bandage were discarded, colour became normal, ulcers started healing. Four weeks later hand entirely normal; full movement, no pain. Treatment concluded after two more sessions. Four years later working happily as typist, arm and hand remained perfectly normal (fig. 2B).

Case 2.—A girl, aged 20, student teacher. Loss of movement and sensation in right hand to 2 inches above wrist, contracted, bandaged, and in palmar splint; swollen, reddish-blue. Reflexes, radiographs, electrical reactions, arteriogram, phlebogram, lymph-flow normal.

Family and personal history.—Father 1914–18 war pensioner, capable only of light work, involved in road accident shortly after patient's accident, with subsequent severe depression. Mother handicapped by claustrophobia. Patient's early ambition was to teach handicapped children.

Present complaint.—March, 1952, at college, glass tubing accidentally pierced right hand in mid-palm between third and fourth metacarpals. Hand bandaged in hospital. Because of "pulling sensation" wound explored two days later; no glass found. Wound healed: "My hand was perfectly all right and I had all sensation, even played netball for about six weeks after accident." May, 1952, hand swelled painlessly, loss of movement index and middle fingers. June, 1952, exploration under general anæsthesia: several small pieces of glass said to have been removed. No improvement. In next twelve months four further surgical explorations. Patient was told that accident could have been much worse and lucky to have hand at all. July, 1953, presented at third hospital with pain and weakness of hand, contracture of fingers, loss of sensation in third and fourth fingers. Intensive physiotherapy, but active movement further diminished. Advised to stop using hand altogether, bandage, and use sling while awaiting sixth exploration. December, 1953, scar excised, flexor tendons freed from adhesions. Slight short-lived improvement. April, 1954, had to leave training college "in case something happened to my hand." May, 1954, loss of sensation spread to second finger. Neurosurgical opinion: permanent disability certain, advised to keep hand bandaged to avoid injury. Physiotherapy continued, but further deterioration. August, 1954, whole hand insensitive, movement grossly restricted, fingers contracted, bluish-red (fig. 3A). October, 1954, referred to one of us (J. P. R.) for opinion re sympathectomy; referred for psychiatric investigation (I. M.).

A

B

Fig. 3—Case 2: A, before treatment, showing swelling and contracture of right hand and scars of injury and operation; B, after five psychotherapeutic interviews.

Treatment and progress.—Superficially coöperative, but hostile: "It is not imagination." Puzzled that surgery, exercises, and physiotherapy had made her worse. Believed this confirmed seriousness of original injury: "probably it is gangrene." It was explained that the mind can produce somatic symptoms without their being put on or imagined; that attention focused on hand, whether by exercises or bandaging, interferes with normal automatic movement and sensation. She wished for amputation: "I am almost better without the arm, I could then forget about the accident and all the bother"; "the hand is dead anyway"; "I could get a better job as a severely disabled person." Shock of the accident discussed, and what she thought had happened, also emotional attitude to parents, particularly her intense sympathy with disabled father. Advised to discontinue bandaging and sling and to make no conscious effort. Later on attempts were made to revive interest in her future and ambition to become a teacher. Little direct reference made to arm. After third fortnightly interview swelling subsided, movement freer, extension of fingers almost complete, sensation returned except in third and fourth fingers. At fifth interview she reported that she found herself using the hand in all activities (fig. 3B). Applied for training as occupational therapist and was accepted "as she appeared to have full use of her hand and a firm grip." Relapse ninth interview: using hand less coincident with appearing before a committee considering compensation for original injury on sympathetic grounds, negligence having previously been denied. Since then improved again, though not prepared to start training till claim settled.

Discussion

Differential Diagnosis

Oedème bleu must be differentiated from medical and surgical diseases of joints, central and peripheral nervous disease, dermatitis artefacta, local malignancy, adiposis dolorosa, and peripheral vascular disease.

Customarily psychological origin of somatic symptoms is diagnosed only after exclusion of organic disease. It is not sufficiently realised that a diagnosis of psychological origin can be made on positive clinical evidence. Such cases are by no means uncommon: Brodie (1837) found that "at least four-fifths of the female patients . . . among the higher classes . . . who are supposed to labour under diseases of the joints, labour under hysteria and nothing else"—a statement endorsed by Paget (1873) and enlarged by Skey (1867) to include "a large proportion of the lower; for much of my practice has been obtained from the wards of St. Bartholomew's Hospital."

A carefully recorded history often gives the clue, as when patients have, or have had, other psychosomatic symptoms. Cases following minor injuries (e.g., the present case 2) commonly have a "latent period" before symptoms appear (Brodie 1837, Horsley 1899); Turner (1918) spoke of a "phase of incubation." Casual medical remarks often aggravate the condition: case 2, when told that she was lucky to have her hand at all, soon lost all power in it; when told she must accept loss of

sensation in two fingers, she promptly lost sensation over the whole hand; when advised to wear protective bandage she banged her hand and "took a chunk out of it."

The attitude of these patients to the affected limb differs from that of the organically ill: they carry the arm as if it did not belong to them or were not part of them, much as patients with non-organic palsy of the leg drag it without attempting circumduction. Mentally they are equally indifferent; they are unconcerned about loss of function and apparently resigned to their condition. Indeed both patients clamoured for amputation: the first said "I hate this ugly thing"; the second insisted that amputation was "the best solution." During examination the patient does not anxiously watch the limb, like patients with organic disease, but looks at the examiner with an expression as of a point scored. Paralysis tends to be more complete, anæsthesia more uniform, pain more constant, swelling more widespread, than in organic lesions. The condition may remain stationary for years—which, as Babinski pointed out, is unknown in organic affections.

Management

Once the condition is recognised as of psychological origin, no attempt should be made to apply physical treatments, which are always taken by patients as confirmation of their belief that their complaint is physical and not mental, making them more refractory to psychotherapy. Wilks (1883):

> "could not speak too strongly in denunciation of the old fashion, the plan of treating hysteria by physic instead of moral means . . . which was known to be useless, and yet was followed as a matter of routine. . . . It cannot be presented too strongly . . . that the mere absence of treatment by physic is a positive stage towards the cure."

In each of the present cases the patient's condition was aggravated by physiotherapy; immobilisation almost beats the patient at his own game and "always has disastrous results" (Charcot 1890). Local treatment of any kind converts a symptom into a self-perpetuating disease, by preventing "the attention being abstracted from the local symptom" (Brodie 1837). Indeed it is best for patient and doctor not to concentrate on the local complaint:

> "To 'make an effort' is sheerly detestable to the hysterical patient, and . . . as impossible . . . but to exert herself, almost unconsciously, because a motive is supplied, is scarcely felt to be an effort" (Reynolds 1872).

The physician must show "painstaking appreciation of the patient's own feelings; determinate assurance . . . that the disease is no idle fancy" (Reynolds 1872); "It is very erroneous, when patients are charged with imagining or inventing their sufferings" (Paget 1873). It is the essence of the illness that patients cannot see that their symptoms arise from an unconscious idea or emotion (Macalpine 1954); they behave much like patients with frank delusions, who are not amenable to rational argument, objective evidence, or reassurance.

We cannot here discuss details of psychotherapy; we conduct expectant, non-interfering, face-to-face interviews. Interestingly Charcot himself warned that in these cases "the abuse of hypnotism has been followed by very serious complications" (Charcot and Pierre Marie 1892).

Psychological Significance

"It is not that the muscles are incapable of obeying the act of volition, but that the function of volition is not exercised" (Brodie 1837). "She says, as all such patients do, 'I cannot'; it looks like 'I will not,' but it is 'I cannot will'" (Paget 1873). Yet there is no lack of will-power in other spheres. (It is historically interesting that Paget (1873) suggested: "It may be due to mental association, perhaps unconsciously.")

Loss of movement and sensation express the idea that the limb is to the patients' "thinking dead" (Greatraks 1666). Hence they avidly accept anything which seemingly confirms this belief. This phenomenon misled Charcot into postulating suggestiblity as the hallmark of hysteria. But patients need not be generally suggestible; they are so within the confines of their morbid ideas.

It is the function of psychotherapy to trace out the development of patients' feelings and ideas. Case 1 spoke of her arm and her family in identical terms: she wanted to cut herself off. When the unbearable confusion of love and hate to mother and foster-mother was worked through, the condition cleared up. Case 2 was from early childhood deeply affected by sympathy for her invalid father, and concretely expressed this by "suffering with" him—psychologically speaking, she identified with him. A striking feature in both was the concreteness of expression achieved in the symptoms, which is characteristic.

Psychiatric Significance

These patients illustrate the transition from somatic symptoms arising in the mind to mental illness proper (Macalpine 1954). Concrete thinking as opposed to conceptual, abstract thinking is common in mental disorders. The same is true of serious persistent disregard of one's own interest, which our patients displayed by readily accepting their disability; indeed their insistence on amputation may be regarded as a degree of self-mutilation amounting to partial suicide. Their inaccessibility to objective evidence and reassurance differs from frank delusions only by their false beliefs being centred on their body and not on the outside world. Thus cases of *oedème bleu* illustrate the early or mild stages of mental illness, the disorder still being confined to the patient's relation to himself, to his mind and his body (Macalpine and Hunter 1955). The presenting symptom must not be regarded as a foreign body to be removed; rather it plays a vital part in the mental economy, and if treated in isolation or by physical means patients may be much worse off. Other somatic symptoms equally likely to be misunderstood and hence mismanaged may appear, or a frank psychosis may develop. This is confirmed by patients in whom the condition alternates with periods of psychosis (Brodie 1837).

Recognition of localised abnormalities such as *oedème bleu* is therefore of immediate practical importance, and their study may advance our understanding of mental illness in general.

Summary

Two cases of *oedème bleu* are reported, and the condition is discussed in its historical, clinical, psychological, and psychiatric aspects.

We thank Mr. N. K. Harrison, of the photographic department, for the figures.

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AFIBRINOGENÆMIA

ASSOCIATED WITH SEVERE UTERINE HÆMORRHAGE FOLLOWING CÆSAREAN SECTION

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A CASE of postpartum hæmorrhage associated with a deficiency of fibrinogen was reported by Kelsey and Muirhead (1955), who found that few such cases had been published. We describe here a further case, in which severe hæmorrhage occurred during a lower-segment cæsarean section done for prolapse of the cord.

Case-report

A woman, aged 38, who had previously borne three children, was admitted as an emergency case to the Gables Maternity Hospital, Peterborough, in labour with a prolapsed cord, at 3.20 A.M. on Sept. 29, 1955. Lower-segment cæsarean section was performed at 4 A.M. The placenta was found attached to the lower segment (anterior wall of the uterus) as a type-1 placenta prævia; the amniotic cavity was incised lateral to the placenta, which was displaced medially. A healthy female infant weighing 7 lb. 15 oz. was delivered. Hæmostasis was difficult to achieve, 55 oz. of blood being lost during the suturing of the uterine incision. A specimen of blood was taken from an arm vein for grouping and cross-matching, and an intravenous drip was set up. 'Intradex' 2 pints was given, followed by one bottle of 4·3% dextrose and 0·18% saline solution.

6.15 a.m.: blood-pressure (B.P.) 80/60 mm. Hg, pulse-rate 110.

7 a.m.: B.P. 80/60. A few minutes later a report was received from the consultant pathologist that the specimen of venous blood taken during the operation, before the start of intravenous therapy, had not clotted.

8.15 a.m.: triple-strength plasma (small pool) was given intravenously with 'Synkavit' 50 mg.

8.30 a.m.: B.P. 80/75.

9.30 a.m.: B.P. 116/76.

10.45 a.m.: B.P. 105/75; pulse-rate 100.

11.15 a.m.: clinical improvement; less bleeding per vaginam, and blood beginning to clot.

12.45 p.m.: fibrinogen 186 mg. given into intravenous drip.

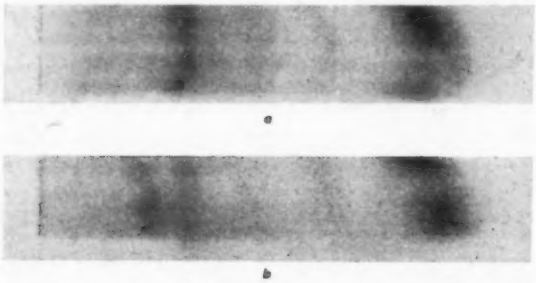
1 p.m.: blood-transfusion started of group-A rhesus-positive compatible blood; 3 pints given in next few hours.

4 p.m.: slight bleeding per vaginam; general condition much improved.

7 p.m.: B.P. 116/95, pulse-rate 84.

Recovery Period

Next day (Sept. 30): normal lochial loss. Oct. 3: Hb 58% (8·2 g. per 100 ml.); bleeding-time 2 minutes; clotting-time 4 minutes; 3 pints of blood given. Oct. 12: Hb 75% (11·0 g. per 100 ml.). Oct. 15: mother and baby discharged well.



a

b

Paper electrophoresis of plasma: *a*, first specimen, not showing any fibrinogen; *b*, second specimen, showing fibrinogen (level was 312–313 mg. per 100 ml.).

Electrophoresis

The first specimen of venous blood still failed to clot after 102 hours. A second specimen of venous blood was taken at 2 P.M. on Sept. 29, and both specimens were examined in the Department of Medicine, Cambridge University Medical School. The results of paper electrophoresis of the plasma are shown in the accompanying figure. No clot was obtained with the plasma taken before the administration of any intravenous therapy. The plasma taken 75 minutes after fibrinogen had been given contained 312–313 mg. of fibrinogen per 100 ml. of plasma.

Discussion

If the blood ceases to clot, replacement of fibrinogen is urgently needed. This can be done either by giving fibrinogen intravenously (fibrinogen can be obtained from regional blood-transfusion centres but is in short supply) or by infusion of plasma of double, treble, or quadruple strength (Barry et al. 1955), made up by simply adding respectively a half, a third, or a quarter the usual volume of water. This should be sufficient, in most cases, to correct afibrinogenæmia (Scott 1955).

Intradex or a similar preparation should be given to help to restore the blood volume, pending the arrival of fibrinogen from the regional blood-transfusion centre. This should be done in spite of the considerable clinical and experimental evidence that dextran can impair the coagulation mechanism. In view of this evidence, however, it seems wise to limit the use of dextran to 1 or 2 pints, and to follow this up as soon as possible with transfusion of grouped cross-matched whole blood.

Small test-tubes should be kept ready in obstetric units to enable the clot-observation test to be carried out. Weiner et al. (1953) say that, even when clotting takes place, it may be followed within an hour by fragmentation and dissolution, and that, if this happens, fibrinogen should be given immediately to restore the ability of the blood to clot. Multiple whole-blood transfusions will not do this.

The patient showed clinical improvement at 11.15 A.M. after the administration of triple-strength plasma by intravenous infusion, the clot formed being soft and mushy. The fibrinogen (186 mg.) was given at 12.45 P.M. —i.e., $4^1/_2$ hours after the plasma. The normal range of plasma-fibrinogen level is about 220–400 mg. per 100 ml. and in pregnant women near term about 450 mg. per 100 ml. (range 300–600 mg. per 100 ml. during labour). We therefore consider that the infusion of triple-strength plasma restored the clotting-power to almost normal and that the small dose (186 mg.) of fibrinogen restored it to normal.

Barry et al. (1955) state that, when rapid coagulation is essential, pure human fibrinogen 4000–6000 mg. should be given intravenously.

Summary

A case of afibrinogenæmia associated with massive postpartum hæmorrhage after a lower-segment cæsarean section is described.

It was treated by intravenous infusion of fluids and of plasma, blood-transfusion, and intravenous injection of fibrinogen.

We should like to express our thanks to Miss I. M. Gallant, matron of the hospital, and her staff; to Dr. R. E. Loder, consultant anæsthetist; to Dr. D. H. Fulton, senior consultant pathologist; to Dr. C. V. B. Walker, of the regional blood-transfusion centre, Cambridge; and to Dr. J. F. Mustard and Dr. M. J. Newlands, of the department of medicine, Cambridge University Medical School.

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A HYPERTENSIVE FAMILY

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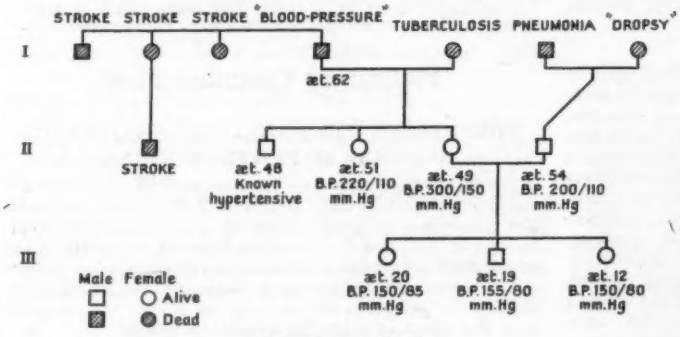
IN 1947 Platt stated that he had not yet discovered a family in which all the siblings had essential hypertension and that neither had Weitz. Both these workers, however, found a strong suggestion of heredity in essential hypertension in about 75% of cases (Platt 1947, Weitz 1923).

I report here a family with three generations of hypertensive patients (see figure). All the first generation died of stroke except one who died of "high blood-pressure" at the age of 62.

All three of the second generation are alive, although somewhat precariously, and all have hypertension. I have personally examined two, and I am told that the brother who lives away is having treatment for "blood-pressure." One of the sisters is married to a man with a moderate hypertension (200/110 mm. Hg), and they have three children aged 20, 19, and 12 years (third generation). All these three have a systolic blood-pressure on the high side, particularly the girl aged 12 years. All the readings were taken with the patients at home resting in an armchair and were repeated several times. Urinary albumin was absent in all the third generation and in their mother. The others were not tested.



A hypertensive family.

In the second generation two daughters and a son, all living have hypertension, and a cousin of theirs died of a stroke.

Discussion

The normal blood-pressure of children aged 12 years is 102–115 mm. Hg systolic and 62–72 mm. Hg diastolic (Holt and McIntosh 1940); the blood-pressure of the girl aged 12 years is abnormally high at 150/80 mm. Hg. The elder girl, aged 20, has a blood-pressure of 150/85 mm. Hg and the boy, aged 19, one of 155–80 mm. Hg. These are the lowest recordings and can be considered higher than normal for children of their ages.

On their mother's side of the family there seems to be a dominant gene which has become apparent in all near blood-relations. Their father also has moderate hypertension. Unfortunately his brothers and sisters cannot be traced. All the three children are well.

I intend to follow up the third generation as far as possible, but marriage has taken away the eldest girl and the Services the boy, scattering the family; and family reunions are hardly the time for the doctor to appear, armed with his sphygmomanometer, like a spectre at the feast.

It is generally agreed that death from apoplexy, be it cerebral thrombosis or cerebral hæmorrhage, is associated with hypertension (Brummer 1947). Thus all the first generation must have been hypertensives.

Summary

Three generations in a family have been hypertensive; all those living have hypertension and those deceased had hypertensive deaths.

In the third generation, slight but persistent hypertension is noted in a girl aged 12 years, a boy aged 19, and a girl aged 20.

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ACUTE CHYLOUS PERITONITIS

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THE presence of chyle and chylous fluid in the abdominal cavity is unusual, and it is particularly rare to find acute peritonitis in association with a chylous ascites. I could find no reports of acute chylous peritonitis in British literature, but 27 cases have been described in American and European journals. Hoffman (1954) collected 23 cases, and added 1 of his own, Jackson (1953), Olechowski and Froyd (1952), and Kelemen (1954) each described single cases. Every case was regarded as an "acute abdomen," and the diagnosis was established at laparotomy.

Case-report

A forester aged 27 was admitted to hospital complaining of severe abdominal pain of eight hours' duration. The pain, which began soon after he had eaten a breakfast of bacon and eggs, was felt first in the costo-vertebral angles. Later, it travelled round to the umbilical region, and then to the right iliac fossa where it persisted. The pain was constant and intense, with occasional exacerbations. Nausea was continuous, and the patient vomited once before admission. Micturition was normal, and he had had a recent bowel movement, and passed flatus.

He had been in another hospital eighteen months previously with "appendicitis," but he was discharged without operation. Seven years ago, some tuberculous glands of the right side of the neck were excised.

When first seen in hospital, the patient was rolling about in bed and crying out. His face was flushed, sweating, and anxious. His blood-pressure was 120/78 mm. Hg; temperature 97°F, pulse 98, and respirations 34 per min. His abdomen was rigid on the right side and there was guarding on the left side. There was no abdominal movement on respiration. He was tender all over the right side, especially in the right iliac fossa. Bowel sounds were diminished. Liver dullness was within normal limits. There was considerable tenderness on the right side on rectal examination. Analysis of his urine was normal. White count was 8500 per c.mm. Straight X-ray examination of the abdomen was normal.

No definite diagnosis was made, but laparotomy was considered essential to exclude acute pancreatitis or perforated duodenal ulcer, with tracking of bowel contents down the right paracolic gutter.

Operation.—As soon as the peritoneum was opened, the wound was flooded with chyle, of which about 12 oz. was aspirated.

The cæcum was completely white, and the ascending colon patchily so, as if milk had been injected under the serous coat. The mesentery of the ileum, the mesocolon, the pancreas, and several small areas on the posterior abdominal wall were similarly affected. Free chyle lay in Morison's pouch, the right paracolic gutter, and in the rectovesical space. A mass was felt behind the stomach, so the wound was enlarged upwards.

There was an irregular, craggy mass, measuring about 3×2×1 cm., on the posterior abdominal wall of the lesser sac, over the 2nd and 3rd lumbar vertebræ, and from the middle of it came a trickle of chyle. No other abnormality was found. The mass was friable and looked tuberculous; but a neoplasm could not be excluded. A small piece was excised for histological examination.

Closure of the leakage was difficult; but the opening was patched with a piece of omentum, a large "cigarette" drain was inserted into the lesser sac through the gastrocolic omentum, and the wound closed round it.

Pathological Report.—"The tissue submitted is a small lymph-node. Microscopy shows numerous foci of caseation with surrounding epithelioid cell reaction, and occasional giant cells. The appearances are those of tuberculous lymphadenitis. The fluid is milky in appearance, alkaline in reaction, and its specific gravity is 1014. There is no change in the fluid on standing, and it is sterile on culture both on ordinary and Löwenstein-Jensen media. Microscopy shows numerous finely divided fat particles approximately 2 μ in diameter. Only occasional lymphocytes are seen in stained smears. The appearances are consistent with a chylous effusion."

Subsequent Progress.—The patient's pain was abolished as soon as drainage was instituted, and his convalescence was uneventful until the eighth postoperative day, when a small-bowel obstruction developed, and a further operation was carried out. Several loops of ileum were found to be adherent, but the loop responsible for the obstruction was easily freed. All the subserosal collections of chyle had disappeared. Following this, his progress was uninterrupted, and he was discharged on the twenty-fourth postoperative day. He was quite well two years after the operation.

Discussion

The physiology and pathology of the lacteal system are imperfectly understood, and one can only speculate on the reasons underlying the findings in this case. The free fluid in the abdomen was, in the main, pure chyle and not a transudate, as chyle was seen trickling from the mass overlying the cisterna chyli. Subserosal collections of chyle were widespread and patchy in distribution, and it is unlikely, therefore, that these were caused by retroperitoneal spread from the tuberculous mass overlying the cisterna chyli. It is more likely that the inflammatory mass caused obstruction, not only to the main lymph but also to the collateral channels. Lee (1942) showed experimentally that ligature or section of the main thoracic duct alone did not produce chyloperitoneum, because a collateral circulation was rapidly established.

Presumably, when the main lumbar channels and the collaterals were obstructed in this patient, back-pressure was built up and some of the peripheral lacteals ruptured, allowing chyle to spread in the subserosal layer. Subsequently a leak must have occurred in the soft tuberculous mass, and acted as a safety-valve. Collateral channels must, however, have opened up after the first operation, because there was no sign of subserous collection of chyle eight days later.

The initial lumbar pains were possibly caused by increasing pressure in the main lymphatic trunks and distension in the subserosal layers, the change of site to the right side of the abdomen being due to irritation of the peritoneal cavity by free chyle.

Peritoneal reaction following the first operation was sufficient to cause multiple adhesions and obstruction, but the origin of this and of the pain is obscure, because free chyle usually produces little or no pain or reaction in the abdomen or thorax. Blockage of the main lymph-ducts by microfilaria causes stasis, distension, and final rupture of the distended lacteals, but no pain; however, this is a gradual process and is not exactly comparable, as it produces transudates also.

Possibly chyle, in concentrated form, contains some irritant factor, but Wells (1920) found little to suggest its identity, unless it is a diastatic enzyme.

In only 8 of the 27 previously described cases were any lesions found at operation, and in only 3 of those was the lymphatic system affected (Guldmann 1921, Dutton 1930, Jackson 1953).

The prognosis is good in most of the acute cases, but less satisfactory in chronic cases. Only 3 fatal cases of acute chylous peritonitis have been recorded: the associated lesions were paralytic ileus (Papenberg 1932), lymphosarcoma (Jackson 1953), and miliary tuberculosis (Reboiras and Giralt 1938).

Abnormalities in the abdomen may be corrected at operation, but closing the ruptured chylous duct is often difficult. The patch technique worked in this patient, and the establishment of a collateral circulation was rapid. With regard to wound drainage, 18 of the patients previously described were drained and 9 were not; there was no appreciable difference in the convalescence of the 2 groups.

Summary

Acute chylous peritonitis was diagnosed at laparotomy. The predominant feature was a tuberculous obstruction and erosion of the lumbar lymphatic trunks. The erosion was closed with a patch of omentum, and recovery was rapid.

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Preliminary Communication

THE EFFECT OF PARA-AMINOSALICYLIC ACID ON HYPERTHYROIDISM

SINCE the first report by Clausen and Kjerulf-Jensen [1] many investigators have reported that in some patients the prolonged administration of *p*-aminosalicylic acid (P.A.S.) is followed by the development of goitre with or without myxœdema. Recent investigation by Balint et al.[2] and Macgregor and Somner [3] has apparently shown the anti-thyroid activity of P.A.S. We report here the effect of P.A.S. on hyperthyroidism.

Calcium P.A.S. 15 g. a day by mouth was given to 3 male and 10 female hyperthyroid patients.

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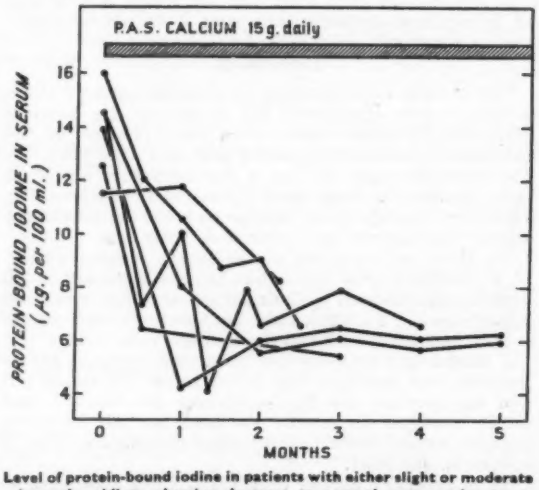

Level of protein-bound iodine in patients with either slight or moderate hyperthyroidism, showing decrease to normal range under treatment with P.A.S.

RESULTS OF TREATMENT OF HYPERTHYROIDISM WITH P.A.S.

Result	Administered longer than 2 mos.	Discontinued within 2 mos. because of pyrexia	No. of cases
Full control	5	1	6
Control→relapse	2	1	3
No improvement	3	1	4
Total	10	3	13

The patients with either slight or moderate hyperthyroidism were improved by P.A.S. The accompanying figure shows that the amount of protein-bound iodine in the serum of these patients decreased to the normal range under the treatment. The basal metabolic rate of the patients in whom this happened fell significantly.

In 4 patients with severe hyperthyroidism the amount of protein-bound iodine in the serum either decreased temporarily or did not decrease at all under the treatment. 3 patients with moderate hyperthyroidism in whom the amount of protein-bound iodine in the serum decreased to the normal range relapsed under the treatment (see accompanying table). The 24-hour uptake of ^{131}I by the thyroid glands of the patients who responded to treatment was considerably diminished, but that of the patients who did not improve remained unaltered by the treatment with P.A.S.

3 patients developed pyrexia during the treatment; this was intermittent and fluctuated between 98°F and 102°F. As soon as the P.A.S. was discontinued, the pyrexia disappeared. The relation between the severity of the hyperthyroidism and toxicity is indicated in the table, which shows that P.A.S. is apt to be toxic to patients with hyperthyroidism.

P.A.S. is an aromatic anti-thyroid substance which inhibits the binding of tyrosine and elemental iodine.[4] Its anti-thyroid activity may be compared with that of *p*-aminobenzoic acid, with which Berman [5] and Goodwin et al.[6] successfully treated hyperthyroidism. Though the anti-thyroid activity of P.A.S. in euthyroid people is weak according to our experience, about half our patients with hyperthyroidism responded to P.A.S. We cannot recommend P.A.S. for all patients with hyperthyroidism, but it may be useful in the treatment of tuberculous patients with hyperthyroidism.

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New Inventions

JEJUNAL-BIOPSY TUBE

JEJUNAL biopsies can be obtained by a modification of the duodenal-biopsy tube described by Shiner.[1] Fig. 1 shows the component parts of the biopsy tube, and fig. 2 a sample biopsy.

The tube, which is flexible, measures 161·5 cm. in length and 5 mm. in diameter. The headpiece is 2·5 cm. long and has a diameter of 1·3 cm. at its widest point. The diameter of the biopsy hole is 3·5 mm. The knife-cylinder is 9 mm. long and is ridged at its distal end. An air-hole is situated in one of its ridges extending

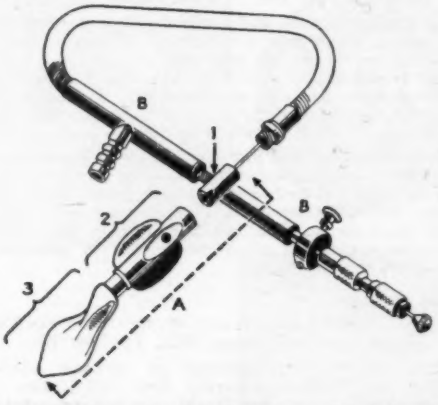

Fig. 1—Jejunal-biopsy tube. A, headpiece: (1) knife-cylinder; (2) biopsy head; (3) balloon. B, tailpiece, with lateral exhaust.

down the side of the knife-cylinder, thus allowing air to reach the rubber balloon at the distal end of the headpiece. The tailpiece of the tube is essentially the same as that in the duodenal-biopsy tube except that it is longer and allows more play in the movement of the wire, which has to travel a greater length within the flexible tube.

The tube is introduced in the same way as the duodenal-biopsy tube and its course is guided fluoroscopically. When the first part of the duodenum is reached the balloon is inflated and guides the headpiece along into the jejunum. The balloon is an essential part of the jejunal-biopsy tube as it has been found impossible to make the headpiece travel through the third and fourth parts of the duodenum without it.

Fig. 2—Jejunal biopsy: (*a*) villi; (*b*) crypts of Lieberkühn; (*c*) muscularis mucosæ; (*d*) cellular infiltration. (× 80.)

Fig. 2, from a specimen taken with the jejunal-biopsy tube, shows the full thickness of the jejunal mucosa with well-preserved villi, and the muscularis mucosæ.

I should like to thank Mr. G. Hawkins, of the Genito-Urinary Manufacturing Company, for his invaluable help in the construction of the instrument.

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Reviews of Books

Munk's Roll

Vol. IV. Lives of the Fellows of the Royal College of Physicians of London, 1826–1925. Compiled by G. H. BROWN, M.A., B.LITT. London: Royal College of Physicians. 1955. Pp. 637. 42*s*.

William Munk's *Roll of the Royal College of Physicians of London* was first published in 1861. Its two volumes contain biographical sketches of the 1351 fellows and licentiates admitted to the college from its foundation in 1518 to the end of the 18th century. A third volume published in 1878 added 372 lives to the total, and carried the record forward to 1825, the year of the college's removal from Warwick Lane to its present site in Pall Mall East. The fourth volume, which was largely inspired and launched by Sir Henry Bashford, extends the *Roll* (of fellows only) over a further century. It contains short biographies of the 874 fellows who were elected between 1826 and 1925 and who died before Jan. 1, 1954. They have been written to a certain standard of detail and a rough (not a rigid) uniformity of presentation, the aim being to ensure that the same detail, when available, is provided in each biography, rather than that they should follow the same exact pattern. No attempt has been made to include complete bibliographies of fellows' writings; but their more important works are named in the text, and there is usually some indication of the branches of medicine in which they were particularly interested.

These biographies cover a century of unprecedented change in the practice and organisation of medicine in the British Isles, and in every development fellows of the college played a significant part: Marshall Hall, William Gull, William Jenner, Samuel Wilks, Andrew Clark, John Hughlings Jackson, Clifford Allbutt, William Osler, Patrick Manson, Bertrand Dawson, David Bruce, Charles Sherrington, and Frederick Gowland Hopkins were among them. Their influence and interests were not confined to medicine, and these biographies relate, too, something of their many activities in other spheres of life. The aim has been to convey in small bulk a picture of the man.

The four volumes of *Munk's Roll* are a most useful source of information not only about the college in the four centuries of its existence but about the practice of British medicine generally during the same period.

An Atlas of Regional Dermatology

G. H. PERCIVAL, M.D., PH.D., F.R.C.P.E., professor of dermatology, University of Edinburgh; T. C. DODDS, F.I.M.L.T., F.I.B.P. Edinburgh: E. & S. Livingstone. 1955. Pp. 264. £5.

To produce a book containing 475 colour photographs at a net cost of about 2½*d*. per picture is in itself something of an achievement. On the whole the colours are adequate and comparable. The choice of material is largely representative of the commoner diseases the authors set out to illustrate, but "lupus erythematosus profunda" is a strange choice for two pictures in an elementary text. Two other illustrations appear to be colour prints of photographic transparencies of drawings of moulages of patients and it is not surprising that the final effect is unlifelike.

The size of the pictures does not permit the demonstration of the finer details of morphology upon which dermatological diagnosis must at times depend; but this book should help those students and practitioners who discover too late that the place to learn dermatology is in the outpatient department of a busy hospital.

Die Tests in der klinischen Psychologie

Zweites Halband. Editor: Prof. Dr. ERICH STERN. Zürich: Rascher. 1955. Pp. 450. Sw. fr. 31.50.

IN this volume a number of tests are described which have been used in France, Germany, and Switzerland but are little known in the English-speaking countries.

Thus the colour test devised by Max Lüscher, of Basle, the pyramid-test which Robert Heiss developed on the basis of a method used by Max Pfister, the Wartegg test (here expounded, not very plainly, by its author), and the Sceno test developed by Gerdhild von Staabs are reported in sufficient detail to enable the reader to judge whether he wants to inquire more closely into their theory and clinical or experimental use. In most instances he may well conclude that ingenious and potentially useful though they are, the humdrum processes of standardisation and validation should have been applied to them before they were put out as clinically valuable. The chapters dealing with familiar tests, such as the Rorschach, do not bespeak an effort at critical appraisal, but rather the attachment which people have to loyal servants and long-used tools.

Neuroglia

Morphology and Function. PAUL GLEES, D.PHIL., M.D., demonstrator and lecturer in physiology, University of Oxford. Oxford: Blackwell Scientific Publications. 1955. Pp. 111. 25*s*.

MUCH of the classical work on the morphology of the glia has been written in German and Spanish. This review is therefore useful in that the widely scattered literature has been brought together in concise form. The subject is treated historically: the anatomy and physiology of the astrocyte, the oligodendrocyte, and the cerebral histiocyte are discussed in turn, and Dr. Glees gives his own views which are founded on his morphological studies, largely with silver techniques. He justly pays tribute to the important work, so often overlooked, of Ford Robertson in this country. At the end of the book there is a short account of the contributions made by the few workers who have so far made use of tissue-culture, and the hope is expressed that before long more precise knowledge of the metabolic function of these cells will materialise with the aid of this essential technique.

As the concept of glial structure and function is by no means easy, the subject calls for rather more emphasis on the living rather than the fixed cell; but in the present imperfect state of physiological knowledge this is no easy task for an author.

Ionography

Electrophoresis in Stabilised Media. HUGH J. MCDONALD, D.SC., professor of biochemistry, Stritch School of Medicine of Loyola University, Chicago. Chicago: Year Book Publishers. London: Interscience Publishers. 1955. Pp. 268. 48*s*.

ELECTROPHORESIS, and particularly paper-strip electrophoresis, is being used increasingly in clinical chemistry, although there are some who believe that it is a technique better kept for the research laboratory. This useful book is a comprehensive survey of the vast literature devoted to the technique of electrophoresis on paper and in starch columns and other stabilised media.

There is an historical introduction, and a chapter on types of apparatus with an admirably objective viewpoint. Methods of scanning are described and criticised, and there is a long section on the determination of electrophoretic mobilities using paper strips. The last five chapters deal excellently with the application of electrophoresis in medicine, biochemistry, and chemistry.

Arctic Doctor

Dr. JOSEPH P. MOODY, with W. DE GROOT VAN EMBDEN. London: Odhams Press. 1955. Pp. 256. 15*s*.

THE subtitle—an account of strange adventures among the Eskimoes—hardly does full justice to the merits of this book; for Dr. Moody has managed to tell in relatively few pages a thrilling tale of his life and work in the Canadian East Arctic. The adversities of the climate and the handicaps of single-handed work in this outpost, with a population scattered over 600,000 square miles, necessitated travelling by dog-sledge, canoe, and small aircraft, and sleeping in igloos. It entailed the risks of treatment by radio-telephone when travelling was impossible, and the control of an epidemic of poliomyelitis. To face this task, Dr. Moody was well equipped with a mind receptive to the beauty of wild life and Nature (there is a fine description of the aurora borealis); and he was fortified by a strong sense of humour which helped him in his approach to the Eskimoes and the study of their lore, and eventually rewarded him with their confidence.

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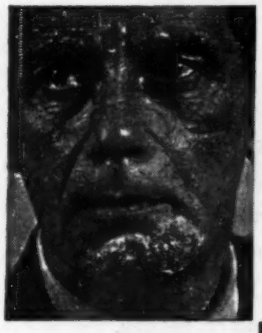

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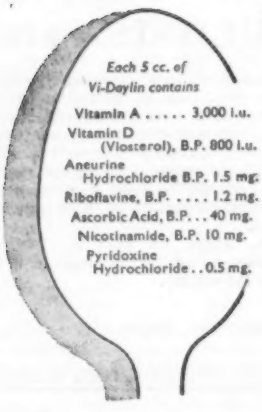

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THE LANCET

LONDON: SATURDAY, JAN. 14, 1956

Food-poisoning

WHEN illness is caused by staphylococcal enterotoxin, symptoms appear so rapidly that the sufferer may make a reasonable guess at their origin and the investigator may be able to save some of the suspected food for examination. Salmonella infections, on the other hand, have an incubation period of up to forty-eight hours, and by this time memories are dim and the dustman has called. Nevertheless, medical officers of health and bacteriologists must admit that 39% is too large a proportion of all "incidents" to be written off as "cause unknown": this is the figure given in the report [1] of the Public Health Laboratory Service on food-poisoning in England and Wales in 1954—a report which, like its forerunners, is a clear and objective study that makes the best use of information much of which is for many reasons incomplete. Clostridial food-poisoning won its first mention in the report for 1951–52, and it may be that imagination and careful bacteriology will reveal other bacterial causes in due time. As in many other diseases of doubtful origin, an unrecognised virus has been suggested as a cause of some outbreaks of food-poisoning. In the absence of much evidence it would be wise to take a firm grip of Occam's razor. Perhaps the chemical examination of food is pursued upon a too-stereotyped plan: there are other irritants than the heavy metals, and few doctors or chemists know all the secrets of food-processing. But probably the lack of any animals (other than the long-suffering laboratory staff) which may be used to detect bacterial enterotoxins is the greatest handicap to increasing our knowledge of the origin of food-poisoning.

As in previous years, salmonellæ were responsible for more than half the incidents whose cause was known in 1954. Staphylococci and clostridia made up no more than 2% and 1% respectively of the total. But these figures are misleading in that a large number of incidents due to salmonellæ were isolated infections while the other genera were associated with outbreaks involving many people. The origin of these single infections with salmonellæ remains a mystery. The infectious dose of most strains for man is large [2]; the organisms may not be evenly distributed through infected food; and symptomless "infections" are not uncommon among the other members of the family of one with overt disease. Perhaps the natural history of salmonella infection is not so straightforward as we used to think: it may be that sometimes "food-poisoning" is a misnomer. Among the vehicles of infection, "made-up" meat maintained its evil reputation, being responsible for 170 out of 250 outbreaks of known cause. Re-heated meat is the source *par excellence* of enterotoxic food-poisoning, but sausages, brawn, and meat pies have all had their victims. Six outbreaks (of which five were staphylococcal) were traced to tinned meat. It took reputable canners a long time to live down their clumsy beginnings in the trade and it is regrettable that food which should in theory be sterile should once again be open to suspicion.

The provisions of the new Food Hygiene Regulations [3] are beneficial, and in spite of some objections by representatives of the trade, they do not make any outrageous demands upon caterers. Nevertheless the Food and Drugs Amendment Act, 1954, as a whole is a pointed example of the difficulty of regulating the trivialities of daily life by the written word. It creates new offences but offers little hope of greater rewards here or hereafter. No-one can imagine that to punish the malefactor who smokes a cigarette while he wraps a pound of cod in newspaper will make much difference to the figures in future annual reports on the incidence of food-poisoning. This Act will do some good but is unlikely to alter those figures very much. Vaccination succeeded because smallpox was a horrid disease of which every one had some experience. The same to a lesser extent (and helped by brilliant publicity) was true of the campaign against diphtheria. If food-poisoning were disfiguring or produced lasting disablement it would not be difficult to whip up some strong feeling on the subject among the public at large. As it is, food-poisoning is of little account to most of us because it is far more dangerous to cross Oxford Street on foot than to sup off a hotted-up dish of delicious stew. No-one seems to have persuaded the man in the street that he eats his black pudding or saveloy at his peril, and, in truth, he who tries will not have an easy job. Legislation which runs too far ahead of public opinion seldom has its designed effect.

Medical officers of health have devoted much energy to local campaigns to improve the cleanliness of food and the way in which it is sold and served. Some catering firms have seconded these efforts with commendable zeal. If the results have been disappointing they have at least served as a warning of this Act and its consequences. Before he begins another campaign to the same purpose, the medical officer of health might give some thought to adding to our knowledge of the essential causes of food-poisoning. Few have experience wide enough to make that alone the basis for policy and action; and it is only by pooling knowledge (as the Public Health Laboratory Service reports do) that our understanding will increase. No outbreak of food-poisoning is too small to deserve full inquiry. Not long ago Sir WILLIAM SAVAGE [4] once again advised his colleagues of the advantages of investigating public-health problems in person and on the spot. It may be convenient to employ sanitary inspectors and health visitors as investigators, but no-one except the medical officer of health has the training and knowledge needed to make the best use of the evidence at hand.

The Reluctant Patient

THE problem of patients who leave hospital in defiance of medical advice has never received so much attention in this country as it has elsewhere, especially in France and America. In France the question has recently been given added emphasis by new legal measures put forward for the treatment of alcoholism, of which the increase is causing much concern; and in the United States, by all accounts, the irregular

1. *Mon. Bull. Minist. Hlth Lab. Serv.* 1955. **14**, 203.
2. McCullough, N. B., Eisele, C. W. *J. infect. Dis.* 1951, **88**, 278; *Ibid*, 1951, **89**, 259.
3. The Food Hygiene Regulations, 1955. S.I. 1955, no. 1906. H.M. Stationery Office; see *Lancet*, 1955, ii, 1388.
4. Savage, W. *Publ. Hlth, Lond.* 1955, **68**, 71.

discharge of tuberculous patients is widespread. These difficulties in the treatment of tuberculosis are much rarer in this country, but it would be unwise to dismiss as insignificant the irregular departure of patients from our sanatoria, because these people are often infectious and may be psychotic, and they usually come from and return to the poorer strata of society. SNELL [1] found that during the period 1938–51 the over-all irregular-discharge rate for an English sanatorium was 16%, but it had fallen to 5% by 1954. The late Dr. LORENZ and his team [2] at the Veterans Administration Hospital at Madison, Wisconsin, have made an extensive and systematic inquiry into irregular discharges and they have classified the patients involved into three groups: leaving against medical advice (A.M.A.); absent without official leave (A.W.O.L.); and disciplinary discharge (D.D.).

What leads these patients to take a drastic step which many of them know may lead to permanent ill health and even early death, quite apart from endangering their family? CALDEN [3] devised the Madison sentence completion form, containing 80 items which could be grouped for analysis, to give the patient's reaction to the diagnosis, rest in bed, hospital routine, his family and friends, and many other facets of his life before and during his stay in hospital. Using these records, LORENZ et al. were able to compare the background and character of 100 irregularly discharged patients with a similar number who stayed and were discharged only when they had received maximum benefit from treatment. Of the irregular discharges, 81 were A.M.A., 10 were A.W.O.L., and 9 were D.D. Factors which were not statistically significant between the two groups were age, race, marital status, distance of hospital from home, and activity of the disease; but occupation was of importance, and of the 100 who left irregularly 12 had no known occupation and 38 were semi-skilled. Fewer irregularly discharged patients had had surgical operations, but this might well be because they had more extensive disease which in itself might have precluded surgical treatment at the time of their discharge, although perhaps not ultimately. The average period in hospital for these patients was 148 days, compared with 260 for those discharged normally. 40% of irregular discharges took place within the first 3 months, and only 8% after 300 days. BEACHAM,[4] studying the records from Baltimore City Hospitals where the irregular-discharge rate among tuberculous patients fell from 51% in 1946 to 20% in 1951, concluded that the rate would fall even further if particular attention was paid to the patients' difficulties before their admission to hospital. Women were often worried about the welfare of their children, and men about money matters. If these worries could be eased before or soon after admission, the fretful patient would accept his lot much more readily. And TEDESCO [5] declared that the physician first making the diagnosis of tuberculosis had a big responsibility, especially in indicating how long treatment might take. In this country patients are often more fortunately placed: the benefits of National Insurance include special financial provision for the tuberculous; and as the majority of patients are sent to sanatoria through chest clinics or hospitals they have an opportunity to discuss their disabilities and worries with the almoners and, through them, with representatives of the National Assistance Board. Health-visitors can also play an important part in calming the family disturbance, especially by taking an interest in the welfare of the children. TOLLEN,[6] in considering that the chief reasons why the American patient leaves against advice, wrote of pressure from outside the hospital (usually personal, social, and economic) and influences acting within the hospital, such as the patient's failure to adapt himself to the new life and his dislike of the environment. TOLLEN also referred to the ill effects sometimes produced by the attitude of the hospital staff, from porters to physicians, by too strict regulations, and often by the treatment itself. SANDS et al.[7] came to similar conclusions, and they suggested that isolation, if necessary enforcible by law, was the solution to irregular discharge. NORTHROP et al.[8] have tried such a scheme for some years. They had a reasonably attractive sanatorium with sufficient beds, in not too isolated a spot and staffed by a competent and sympathetic staff, with all the ancillary services of occupational therapy, recreation, vocational guidance, and a medical social service. But the irregular-discharge rate was 44% in 1950, and some way of improving matters was sought. For difficult patients who were judged unlikely to stay, 27 beds were reserved in a locked ward. After two weeks' detention, the patients were allowed in the regular ward, but at the least sign of insubordination they went back to the locked ward. It is not surprising to learn that the fire services had to be called in to advise on the safety of the hospital after two attempts had been made to burn down the ward. A less severe method, more likely to find favour in this country, was devised by LORENZ et al.[9] They noted that many patients left hurriedly in a tantrum; so they devised a slowing-down technique, again involving a special ward with a special doctor. The patient who had rashly decided to go was put here while his clothes and money were brought and final investigations were completed; all the people in hospital who might have had a favourable impression on him called to discuss his problems and to say goodbye. In the first six months after this ward was open, 24 patients were admitted to it at least once and 16 were dissuaded from leaving: as a result the irregular-discharge rate of the hospital fell from 36% to 15%. LORENZ et al. conclude that the ward had this rather unexpected effect because patients did not like to have to explain why they wanted to leave hospital.

What happens to the patients who cannot be dissuaded from leaving? BREWSTER and FLETCHER [10] concluded from follow-up surveys that the mortality-rate among irregularly discharged patients is two or three times greater than in more amenable patients. ALLISON [11] made the interesting point that as many as 47% of those irregularly discharged received further hospital treatment, but only 13·7% of those who left normally had to be admitted again.

1. Snell, W. E. *Amer. Rev. Tuberc.* 1954, **70**, 755.
2. Lorenz, T. H., Lewis, W. C., Calden, G., Thurston, J. R. *Ibid*, 1955, **71**, 419.
3. Calden, G. *Ibid*, 1953, **67**, 722.
4. Beacham, E. C. *Ibid*, 1952, **66**, 213.
5. Tedesco, J. F. *Ibid*, 1953, **68**, 393.
6. Tollen, W. B. Veterans Administration Pamphlet, 1948, p. 10.
7. Sands, J. H., Grove, W. K., Hirsch, J. W., Drickey, J. M. *Dis. Chest.* 1955, **27**, 548.
8. Northrop, C., Fountain, J. H., Zahn, D. W. Transactions of the National Tuberculosis Association, 1952, p. 162.
9. Lorenz, T. H., Green, J. M., Lewis, W. C., Stone, M., Calden, G., Thurston, J. R. *Amer. Rev. Tuberc.* 1955, **72**, 633.
10. Brewster, A. W., Fletcher, R. C. *Publ. Hlth Rep., Wash.* 1949, **64**, 687.
11. Allison, S. T. *Amer. Rev. Tuberc.* 1955, **72**, 552.

As we have said, these matters are of much less concern to chest physicians in this country than in the United States. SNELL believes one reason is that here, where hospital beds are at a premium, patients do not willingly give them up; and they often stay longer than American patients, so that new patients can see the ultimate rather than the less impressive intermediate results of chemotherapy and surgery. Moreover, it may be that in this country we are prepared to place ourselves more confidently in the hands of the doctors on the assumption that they know best. Recent correspondence in our columns indicates that there are in fact a number of patients with active disease, usually among the poorer classes, who discharge themselves; like their American counterparts they may stay in a sanatorium longer if they are readmitted, but they may never be readmitted or not until they have infected a lot of people. A recent case [12] serves as a reminder that for those who refuse to go to hospital, the law can be invoked: and there are many people who say that it is not invoked often enough. We have lately argued [13] that bold moves are now needed if the incomplete victory over tuberculosis is to be turned into a rout; and many chest physicians feel that one way of hastening the defeat of the disease would be to use sterner measures for controlling the intractable patient. Among gentler means, the exchange of information about patients (chiefly financial and social) between sanatoria and chest clinics might be increased—for example, by weekly staff conferences at which potential irregular-discharge patients could be discussed. Some sanatoria have earned bad reputations among patients, and an analysis of their irregular discharges might be illuminating and chastening. The number of tuberculous patients who could thus be restrained from infecting their fellows would not be great; but now that the coöperative patient can almost always be made non-infectious quite quickly, the stubborn few have a new importance.

Origin of Antibodies

THERE has been much speculation about the site of origin of antibodies and the mechanism of their formation; and the debate continues, though the field of the controversy is much narrower than it was, and it may even be possible to draw one or two conclusions without setting off the argument afresh. No single organ in the body can be identified as the sole producer of antibodies. On the other hand, antibodies are not produced at the local site of infection by the antigen, but they *are* formed in the lymph-glands draining the area. The type of cell responsible for antibody synthesis is not known. At one time lymphocytes were commonly believed to produce antibody, but emphasis has now shifted to the plasma-cell or its precursors. Cytology, however, may have to advance a great deal further before we can be certain about the identification of many cellular elements and their life-histories. Recently [14] the presence of antibodies in cells has been detected and localised by treating frozen tissue sections with the specific antigens, followed by antibodies which have been labelled by coupling with fluorescent dyes. The distribution of antibodies after injection of antigen supports the view that the main site of antibody formation is the plasma-cells or their precursors; in comparison, the contribution of the lymphocytes is small. For example, after intravenous injection of antigen into hyperimmune rabbits, little antibody was detected in lymphocytes, but much was found in colonies of plasma-cells present in the red pulp of the spleen, the medullary area of lymph-glands, the submucosa of the ileum, and the portal connective tissue of the liver. For technical reasons the bone-marrow could not be studied. After injection of antigen into the foot pads of rabbits, antibody was found in the popliteal lymph-glands. Antibody was first seen in large immature cells in medullary areas of the glands. As the cells differentiated and multiplied, colonies of typical plasma-cells developed and large amounts of antibody were detected in their cytoplasm. Few antibody-containing cells were found after primary immunisation but many after a secondary stimulus when, of course, considerable quantities of antibody can be detected in the blood. Primary immunisation may result in deposition of antigen in primitive cell types and the secondary antigenic stimulus produces the immediate synthesis of antibody and the development of mature plasma-cells containing the antibody. It is suggested that the cell types responsible for antibody synthesis do not exist in the absence of antigenic stimulus. The alternative view is that antibodies are formed in cells usually producing normal serum-globulin but the presence of an antigenically active molecular fragment has the effect of a "template" or mould. According to this hypothesis, the globulin synthesised is similar to normal serum-proteins, but it is structurally related to the antigen and complementary to it. It is now suggested that antibodies have no inactive normal prototypes. The same technique has been applied to investigate the enhancement of antibody production by the addition of adjuvants, such as aluminium phosphate, to the antigen. Antibody is formed first in the regional lymph-gland and later in the granulation tissue surrounding the nodule which develops at the site of inoculation. The adjuvant effects are ascribed partly to delayed absorption of the antigen and prolongation of the antigenic stimulus in the lymph-gland and partly to the production of the local granuloma in which antibody-producing plasma-cells also develop. The adjuvant effect of the wax obtained from tubercle bacilli is attributed to a widespread proliferation of plasma-cells in the lymph-glands, spleen, and liver and not to local stimulation of macrophage proliferation.

Further light may be thrown on the mechanism of antibody synthesis by the transfer experiments that have been performed with splenic and lymphatic tissue.

Spleens were removed from rabbits which had had an injection of typhoid vaccine four days previously.[15] The spleens, minced and suspended in a culture medium, were found to produce agglutinins for several days. Antibody production was inhibited by respiratory and tissue poisons and also by cortisone. The effect of cortisone may be to inhibit the proliferation of lymphocytes, plasma-cells, or other elements concerned in antibody

12. See *Lancet*, 1955, ii, 819.
13. *Ibid*, pp. 857,1125.
14. Coons, A. H., Leduc, E. H., Connolly, J. M. *J. exp. Med.* 1955, **102**, 49. Leduc, E. H., Coons, A. H., Connolly, J. M. *Ibid*, p. 61. White, R. G., Coons, A. H., Connolly, J. M. *Ibid*, pp. 73, 83.
15. Mountain, I. M. *J. Immunol.* 1955, **74**, 270, 278.

synthesis. Antibody-forming activity can be transferred from an injected rabbit into one that has not been immunised by transplanting cells teased from the lymph-glands draining the injected area.

It is now found [16] that if lymph-glands from normal unimmunised rabbits were treated with serum which had been in contact with *Shigella dysenteriæ* and if suspensions of these glands were injected into irradiated rabbits, antibodies could be detected three or four days later. The transferred glands had not been exposed to antigenic stimulus in the donor animals but only in vitro, and the antigenic stimulus had not been in the form of bacillary cells but only soluble antigens passing into the serum with which the bacteria had been in contact. Furthermore the recipient animals had been irradiated to destroy their own powers of antibody formation. There is thus good evidence that the cells from the transferred lymph-glands were themselves the antibody-forming elements.

It is interesting to note that cells from mesenteric lymph-glands were effective in these experiments, whilst thymus-gland cells were not. On the other hand, intraocular transplants of thymus and Peyer's patch tissue conveyed antibody-forming activity.[17] The donor mice were immunised with tetanus toxoid, and fragments of tissue were transplanted into the anterior chambers of the eyes of mice which had been subjected to whole-body γ-radiation from cobalt-60. Significant but small amounts of tetanus antitoxin appeared in the blood of the recipient mice. When these mice received an intravenous injection of tetanus toxoid there was a specific anamnestic response and the serum-antitoxin rose considerably, although the irradiation had impaired the antigenic response of the recipients' own tissues. The transplants were effective in producing antitoxin in the donor mice only when the donors had been immunised by subcutaneous or intra-abdominal routes and not after intravenous immunisation.

Although the evidence is not conclusive, apparent in-vitro production of diphtheria and tetanus antitoxins has been reported [18] in fragments of lymph-glands and spleen excised from rabbits immunised with diphtheria and tetanus toxoids. The results of the in-vitro experiments seemed to run parallel with passive transfer experiments in which transplantation of lymphatic or splenic cells was followed by antitoxin production in the recipients. Again, passive transfer of cutaneous sensitivity to foreign serum-proteins has been produced by injecting washed leucocytes from the peritoneal exudates of rabbits exhibiting the Arthus phenomenon.[19]

More evidence about the rôle of leucocytes in the body's response to antigenic stimulus comes from work [20] on the fate of intravenous tuberculin in rabbits. Tuberculin protein which had been labelled by radioactive iodine was firmly adsorbed by leucocytes in the blood during the first few hours after injection. Although tuberculin was present in the plasma for some twenty-four hours after injection, no leucocytes containing tuberculin could be detected after the first four hours. Peripheral leucocytes may therefore be responsible for transporting foreign proteins such as bacillary proteins or toxins to parts of the body remote from the site of their introduction. This would result in the accumulation of such substances in lymph-glands, spleen, and inflammatory foci where leucocytes congregate.

It is impossible to assess the full significance of all the complex results that are accumulating, but some points are clear. There are certainly good reasons for concluding that antibodies are produced in certain cells in lymph-glands, spleen, and elsewhere, and that these cells can continue to produce antibodies when removed from their original host and transplanted into another animal, or even when kept in culture outside the body. We still lack, however, a precise picture of the antibody-producing cells; we understand poorly the relation of antibody synthesis to the production of normal serum-proteins; and we do not know how antibodies are produced which are specifically complementary to the antigens administered. The "template" hypothesis, which suggests that antibody is synthesised at the surface of the antigen molecule and thus has a configuration complementary to it, has been subjected to some criticism. This hypothesis requires that antibody be formed only as long as antigen persists in the antibody-forming tissues and cells. There has been no confirmation of in-vitro formation of antibody by the chemical treatment of a mixture of normal serum-globulins and antigen. The alternative theory is that antibody synthesis is analogous to adaptive enzyme production. It is suggested that when once adapted to deal with a new type of antigen, cellular enzymes continue to produce antibodies by self-replication of their own structures until re-stimulated by a fresh dose of antigen. Experiments to decide between the two hypotheses of antibody formation have been carried out [21] with the T-agglutinin, an antibody present in normal serum which reacts with specially treated red cells. Treatment of mammalian red cells with cholera-vibrio filtrates removes a surface antigen, thus unmasking the T-antigen. Animals immunised with treated red cells develop a high-titre T-agglutinin in the serum. The gradual modification of the T-agglutinin in immunised rabbits resembles the production of adaptive enzymes rather than a process dependent upon antigen "templates," and provides some evidence in favour of the adaptive-enzyme hypothesis of antibody formation.

16. Harris, T. N., Harris, S., Farber, M. B. *Ibid*, 1955, **75**, 112.
17. Stoner, R. D., Hale, W. M. *Ibid*, p. 203.
18. Stavitsky, A. B. *Ibid*, p. 214.
19. Tremaine, M. M., Jeter, W. S. *Ibid*, 1955, **74**, 96.
20. Ritts, R. E., Favour, C. B. *Ibid*, 1955, **75**, 209.

Annotations

POLIOMYELITIS ANTIBODIES IN CHILDREN

BEFORE poliomyelitis vaccine becomes widely available in this country we must decide what is the best age for vaccinating children. And to do this we must know the commonest age at which children are infected in this country, so that they can be vaccinated before they are exposed to the greatest risks. But there is very little published information on the distribution of poliomyelitis antibodies in the sera of British children, and the paper by Dr. Fallon on p. 65 of this issue is therefore particularly welcome.

Dr. Fallon looked for antibody to all three types of virus in sera from 78 children living in Betws-y-Coed, in North Wales; this village was chosen because no case of poliomyelitis has been notified there since 1912, when the disease became notifiable. For comparison, he examined 71 similar sera from Liverpool where poliomyelitis appears each year. The sera were taken from infants and from children up to 14 years old, and the results of serological tests for poliomyelitis antibodies were recorded for different age-groups. The findings indicate clearly that in both Liverpool and Betws-y-Coed infection by poliomyelitis viruses in childhood is extremely common. In Betws-y-Coed, antibodies to type-1 viruses were found in the youngest children, and in the age-group 0–4 years 8 out of 22 children had antibody to more than one type of virus. The findings also suggest that infection by all three types of virus is quite widespread among Liverpool children, although there is a

21. Fraser, K. B. *J. Path. Bact.* 1955, **70**, 13.

possibility that infection took place later than in the Betws-y-Coed children. Considerable variation in the age of infection can be expected in different parts of the country. At a recent meeting of the Society for General Microbiology, Dr. A. P. Goffe reported part of a similar investigation by workers at the Central Public Health Laboratory, Colindale. They found that 70% of children under 5 years living in Southend had no poliomyelitis antibodies, whereas 80% of children from Belfast of the same age had antibody to all three types of virus. Details of these and of similar investigations from different parts of the country are awaited with interest.

Clinical infection in this country is, in general, less widespread than in the United States, but much more serious than it is, for example, in Egypt. A comparison of serological findings in this country with those from certain areas in the United States and Egypt suggests that the extent of early infection in this country may also be intermediate between these two areas, but that there may be considerable variations between different parts of this country. If we accept the recommendations of the recent World Health Organisation study-group on poliomyelitis vaccines, different areas of Britain may have to be treated differently in the matter of poliomyelitis vaccination: for example, it would be hard to justify at the moment widespread vaccination in an area like Betws-y-Coed where subclinical infections seem to be immunising the population satisfactorily. In other areas, the possibility of vaccinating children under 6 years will be raised; but the present evidence of the protection afforded by Salk vaccine extends only to children aged 6–10.[1] Research on the protective effect of vaccine in younger children is an important future step.

DISABILITIES OF OLD AGE

IN many parts of the country the initial efforts of the newly formed geriatric units have been directed towards eliminating or reducing unnecessarily long waiting-lists, to shortening the period of illness, to providing adequate treatment for the disabilities of old age, and to placing reabled elderly in suitable acommodation outside hospital. Little has yet been done in the preventive medicine of old age, and major preventive advances are unlikely until more is known of the physiology of old age and of the natural history of the common disorders of the elderly. Since ageing is a physiological process, it is essential for the clinician to distinguish between slight abnormalities of function due to physiological variation and the early manifestations of disease which will respond to early treatment.

There have been few large-scale clinical surveys of old people in localised communities, but Maddison et al.[2] have recently published the results of a survey of 238 volunteers out of 550 people aged 60 or over who live in two Durham villages. A thorough outpatient medical examination, including X-ray examination and laboratory tests, provided a mass of clinical data which was subjected to a factor analysis. The determinables were sex, age, hæmoglobin, systolic blood-pressure, diastolic blood-pressure, and diseases found. Since any old person may have four or even more diseases at any one time, this determinable can be subdivided into limitless attributes. Maddison et al. reduced the attributes to 42 by pooling some items with small frequencies; but they wisely point out that this arbitrary choice of attributes may mean that some of great importance are overlooked. The factor analysis gave four groups which are thought to be closely related to blood-pressure. Thus a systolic blood-pressure of 130 to 159 is associated with health and normal hæmoglobin, but a systolic pressure of 160 to 199 tends to be associated with low hæmoglobin and respiratory, heart, and arterial diseases. A diastolic pressure of 100 to 109 indicates a tendency to multiple disabilities and obesity, whereas a diastolic pressure of 120 to 159 is said to reveal a tendency to malignant hypertension. Few will be willing to accept a concept of malignant hypertension wholly based on sphygmomanometer readings made after a journey to an outpatient clinic; and many will doubt whether blood-pressure readings are sufficiently reliable to be used as determinables, except when repeated under basal conditions. But the hazard of obesity and the part played by anæmia and malnutrition in predisposing to infection gain statistical significance from Maddison et al.'s useful paper.

1. See *Lancet*, 1955, ii, 1279.
2. Maddison, J., Smith, R. C. F., Olbrich, O. *Brit. J. prev. soc. Med.* 1955, 9, 113.

ELECTRON-MICROSCOPY OF THE KIDNEY

THE kidney was one of the first organs to be studied with the electron microscope, but reliable observation of its ultramicroscopic structure has been possible only recently, with the use of appropriate methods of fixation and thin section cutting. The outstanding contributions have come from anatomists in the University of California and the Karolinska Institute in Stockholm.

Pease [1 2] describes the fine structure of the three tissue layers separating the blood in the glomerular capillaries from the "urinary" space—namely, the endothelium, the capillary basement membrane, and the epithelium of Bowman's capsule. As he shows clearly in beautiful electron-micrographs, the endothelium is not a continuous layer but has interruptions or pores 0·1 μ in diameter at a separation distance of 0·05 μ, thus forming a fenestrated membrane. The capsular epithelium, which with the light microscope appears to be closely applied to the capillary wall, is also incomplete and like the endothelium does not form a continuous physical barrier. These epithelial cells lie free in the urinary space. They have thick cytoplasmic processes which give off finer branches interdigitating with those from neighbouring cells, and they are finally attached at regular intervals to the capillary basement membrane (on the other side from the endothelial cells). Bowman's capsule is therefore in the form of a cytoplasmic "lattice" with thick and thin cross bars and small channels 0·04 μ in width between the attachments of the thin processes to the capillary wall. The basement membrane is a homogeneous layer 0·1 μ wide with a central layer and outer and inner cement layers related to endothelium and epithelium respectively. Even with the highest resolution this layer remains a continuous structure with no evidence of a porous system, and thus it forms the sole physical barrier between the circulating blood and the urinary filtrate in the malpighian corpuscle. The statement that the membrane is a "non-vital" barrier could however be challenged, because the term "vital" does not necessarily imply "cellular." There is a similar interrupted endothelial lining to the peritubular capillaries, with pores 0·05 μ in diameter—i.e., about half the size of those in the glomerular capillary. And a similar basement membrane separates the porous endothelium from the basal end of the epithelial cells lining the tubules.

Rhodin [3] first described and illustrated the complicated system of double membranes which divides the basal part of the tubule cells into a number of cytoplasmic compartments open towards the apical end of the cell and containing characteristically large mitochondria correspondingly orientated. Pease [4] interprets these double membranes as infoldings of the cell plasma membrane, and in his sections they are most noticeable in the

1. Pease, D. *J. Histol.* 1955, 3, 295.
2. Pease, D. *Anat. Rec.* 1955, 121, 701.
3. Rhodin, J. Correlation of ultrastructure and function in normal and experimentally changed proximal convoluted cells of the mouse kidney. 1955. Department of Anatomy, Karolinska Institute, Stockholm (privately printed).
4. Pease, D. *Anat. Rec.* 1955, 121, 723.

distal tubules and the thin segments where they may penetrate right through the cell cytoplasm, forming slots sealed off from the lumen of the tubules by cement bars. It is suggested that ionic interchange between blood and urine occurs through these "slots." This complicated system of folds will increase the basal surface area of the cells enormously and may be related to the resorption of water. At the apical end of the tubular cells the "brush" borders are finger-like extensions of cell cytoplasm—short and stubby in the distal tubules. Here and there between the brush processes tiny canals penetrate into the cell substance often opening into vacuoles. According to this analysis of the fine structures of the kidney, the "renal barrier" is in effect a system of pores, canals, and "slots"—a labile ultrafilter whose varying pattern will control the molecular interchange between blood and urine.

Rhodin has attempted to follow by electron microscopy the cytological changes which accompany the resorption of albumin. He observed that in the basal cells of the proximal tubules there was a fusion of mitochondria with loss of their internal structure as they combined with resorbed protein to form very large granules. These large granules eventually re-formed into typical mitochondria. These observations suggest that the future story of the pathology of the kidney will be an account of intracellular changes—and in particular how such changes affect the pattern of the tissue "filter" between blood and urine.

HALLUX VALGUS

Harris and Beath [1] found hallux valgus in 2·2% of a group of young men, and there can be little doubt that the prevalence increases with age. It is certainly more common in the lower social classes,[2] and also in women. Many observers have noted its close association with an increase in the angle between the first and second metatarsals. Truslow [3] suggested that the primary defect was one of adduction of the first metatarsal, but Hardy and Clapham [4] have shown that displacement of the metatarsal probably follows displacement of the digit.

Studies of the feet of young children have thrown little light on the cause of hallux valgus. There is a gradual deviation of the hallux to the outer side as age advances. Craigmile [5] found the deviation to be greater in girls than boys at school-leaving age, but Hardy and Clapham [4] found no such sex difference. In normal adults there is apparently no sex difference in the position of the great toe on radiographic measurement,[6] but there is clearly a great preponderance of women amongst those who seek treatment for hallux valgus. It is hard to reconcile such differing observations.

It is commonly held that unshod races are not victims of hallux valgus. Engle and Morton,[7] in a study of foot disorders in the natives of the Belgian Congo, do not mention it. Wells,[8] however, noted a lateral displacement of the hallux in the South African Bantu, and other isolated examples have also been reported. These unusual cases may be the result of various forms of arthritis.[9] Barnicott and Hardy [10] have now examined the position of the great toe in West Africans. In these people the hallux normally appears in footprints in line with the medial border of the foot, giving a mean hallux angle of zero. In the footprints of the European male and female there is a deviation to the outer side of 6·9° and 11° respectively. Some Africans, however, show a deviation of more than 20° to the outer side. In general, the angulation of the great toe of the African increases with age, and such a change cannot be associated with footwear.

Footwear undoubtedly plays a big part in producing symptoms, and may well increase the deformity.[11] The importance of good shoes in controlling the position of the great toe in children was well shown in the Ealing contributory shoe scheme,[5] in which adequate fitting and frequent shoe changes were followed by a decrease in the deviation of the toe. But, as we have sorrowfully said before,[12] it will need some spectacular change in fashion to make people wear shoes that are good for their feet; and naturally manufacturers are reluctant to make shoes that are hard to sell.

1. Harris, R. I., Beath, T. Army Foot Survey. Ottawa, 1947.
2. Hewitt, D., Stewart, A. M., Webb, J. W. *Brit. med. J.* 1953, ii, 745.
3. Truslow, W. *J. Bone Jt Surg.* 1925, **7**, 98.
4. Hardy, R. H., Clapham, J. C. R. *Lancet*, 1952, i, 1180.
5. Craigmile, D. A. *Brit. med. J.* 1953, ii, 749.
6. Hardy, R. H., Clapham, J. C. R. *J. Bone Jt Surg.* 1951, **33B**, 376.
7. Engle, E. T., Morton, D. J. *Ibid*, 1931, **13**, 311.
8. Wells, L. H. *Amer. J. phys. Anthrop.* 1931, **15**, 185.
9. Haines, R. W., McDougall, A. *Lancet*, 1953, i, 649.
10. Barnicott, N. A., Hardy, R. H. *J. Anat., Lond.* 1955, **89**, 355.

DRUNK IN CHARGE

WHENEVER a person charged with driving or "having charge of" a motor vehicle while under the influence of drink elects (as is his right) to be tried by jury, he stands nowadays a fairly good chance of acquittal. Juries have, on the whole, been reluctant to bring in a verdict of guilty on this charge, largely because the ordinary juryman is often not altogether satisfied by the prosecution's evidence about the degree to which the accused was under the influence. The alcohol content of the blood is rightly recognised as only one point in establishing fitness or otherwise to be in charge of a car. Unfortunately all the other methods adopted by the police (and by doctors summoned by the police) are usually unsystematic; and they may be unsystematically applied, especially in parts of the country where no regular police surgeon's services are immediately available. Greater uniformity at the first examination (especially at the medical examination) of the accused at the police-station, and greater uniformity in the testimony based on it, would do much to remove the impression of vagueness which the jury properly interprets in favour of the accused, even when there is no doubt in the doctor's mind that the driver was in a dangerous condition.

It is therefore interesting to know that efforts have for some years been made by the medical profession in a number of Continental countries, particularly in Scandinavia, Western Germany, and Switzerland, to settle in outline certain guiding points which should invariably be considered by the doctor during these examinations. The Swiss journal, *Touring*, has published the text of an unofficial questionary or aide-mémoire, drawn up by doctors in coöperation with the police and the judiciary, which has for some months been regularly handed to every doctor in the canton of Geneva as soon as he is asked to examine drivers suspected of being drunk. This aide-mémoire (which is filled in on the spot) contains 12 main sections with a number of subsidiary questions. For instance, the examiner records details about the general aspect of the driver and any disturbances of balance or coördination. Writing and reading tests are performed. After the first contact has been made, the patient is asked about his daily consumption of alcohol and his health. Any additional examinations necessary are performed, and if there has been an accident, any signs of cerebral damage are recorded. If a sample of blood is taken, the exact time is written down, and a note is made of any alcohol consumed between the intervention of the police and the examination. Finally, instead of first pronouncing on the degree of drunkenness, the doctor is advised to answer yes or no to the question: is this person under the influence of alcohol? "If so, does he appear to be slightly or seriously influenced? If he is under the influence of alcohol, have you noticed any fluctuation in his ability to concentrate? Have

11. Haines, R. W., McDougall, A. *Lancet*, 1954, ii, 1308.
12. *Ibid*, 1953, i, 1298.

you the impression that the patient is accustomed to alcohol or not ? "

This questionary contains no points which are wholly new; its value lies in the cumulative effect of the information assembled and in the anticipation of certain defences likely to be put forward. Medical examinations conducted systematically and in close detail on this written basis can obviously give the courts far fuller and more uniform data about the state of the accused at the relevant time than they are now getting. Although the document would not itself be admissible under existing rules of evidence, there is no reason why the court should not allow the doctor in the witness-box to refresh his memory by referring to his entries.

BY-PASS OPERATION FOR ARTERIAL OCCLUSION

THE excision of diseased or damaged arteries and their restoration by suture or prosthesis is by no means a modern operation, and it can be traced back at least to the end of the nineteenth century, when Murphy, Payr, and Abbe experimented with suture techniques and glass tubes. The principles of the eversion suture and endothelial approximation which often bear Carrel's name can be found in an article by Jaboulay and Briau published before the turn of the century. In 1897, Murphy successfully excised an aneurysm and reconstructed the femoral artery by a circular invagination suture. The widespread application of arterial repair and substitution had, however, to wait until operations could be confidently performed without fear of sepsis and until angiography was sufficiently developed to give the surgeon a clear idea of the problem facing him. In the past decade much invention and energy have been directed to the re-establishment of blood-flow through the main arteries, and three important operations have been used —endarterectomy, excision and grafting, and finally the by-pass operation.

Endarterectomy (the shelling out of the clot through a long incision in the arterial wall) has been followed too often by postoperative thrombosis extending proximally and distally, involving collateral vessels, and causing loss of a limb. Excision of the thrombosed segment, with re-establishment of continuity by means of an arterial graft or prosthesis, such as nylon, 'Orlon,' or 'Vinyon N,' is now a well-established and remarkably successful operation for large vessels such as the aorta and iliac arteries. The mortality and morbidity after these operations were performed is surprisingly low; and although all the technical problems have not been entirely solved, the results are much better than those reported with other methods of treatment. But the situation is quite different when smaller arteries, such as the femoral or popliteal, are excised and grafted. Here the results are disappointing both in the immediate complication of limb gangrene and in the longer follow-up. Crawford and De Bakey [1] have lately discussed why this is so. They stress that the surgeon must know not only the extent of the occluded segment but also the state of the peripheral arterial bed well beyond the point of occlusion. If the artery beyond is much narrowed and rigid, little benefit can be expected by the removal of the occlusion.[2] It is even more important that any operation on a limb should be designed to minimise the interference to the collateral circulation. The major collateral vessels, on whose preservation the viability of the limb depends, often arise in the patent lumen immediately proximal to the occlusion, and in such cases excision of the thrombosed vessel must include the valuable collateral supply. Sometimes the diameter of the inserted graft is less than that of the destroyed collaterals, and if a secondary thrombosis ensues the limb of necessity becomes gangrenous.

1. Crawford, E. S., De Bakey, M. E. *Surg. Gynec. Obstet.* 1955, **101**, 529.
2. Lindbom, A. *Acta radiol., Stockh*, 1950, suppl. 80.

Crawford and De Bakey therefore use, for the treatment of arteriosclerotic occlusion of the leg arteries, the by-pass operation originally described by Kunlin et al.[3] A graft is joined by end-to-side anastomosis to the host artery above and below the diseased segment. This operation is performed through two small separate incisions which are connected by a tunnel made with a probe or vein stripper. As the incisions are well away from the vital branches, the collateral circulation is not in danger; and the host artery is undisturbed except through the two small incisions. In fact, the operation simply adds an artificial collateral vessel about the size of the normal artery. Crawford and De Bakey use for their anastomosis a freeze-dried arterial homograft, the ends of which have been slightly bevelled; this is sutured proximally and distally to the artery by a simple over-and-over stitch using no. 5-0 arterial silk. Blood-flow through the main artery distal to the occlusion was successfully re-established in 37 of the 40 limbs in which this technique was used. Success was determined by arteriography or by the return of palpable pulses distal to the block. It is particularly significant that none of these patients was made worse by the operation. The indications for intervention were severe intermittent claudication and gangrene. All the patients with rest-pain and claudication were relieved immediately and have remained well for periods up to eighteen months. The results in patients with gangrene were just as impressive. In a paper just published, Crawford et al. [4] confirm that they have found the by-pass operation better than other methods, particularly in patients with relatively long occluded segments. If its further trial is equally encouraging, the by-pass operation may indeed prove to be so notable an advance that the indications for operating on occluded arteries may become much wider.

UNEXPLAINED OSTEOLYSIS

THE mysterious gradual absorption of a single bone, or of a group of bones, is a rare condition found chiefly in young adults, often after a fracture. The ultimate result may be the complete disappearance of part of the skeleton. Krikler [5] has recently recorded a case of this kind: a coloured man of 35 said that five years before attending hospital several of his toes shrivelled up and disappeared. Such a condition, as Engle and Morton [6] have pointed out, is common in the unshod native, but is usually related to local infection or trauma. In Krikler's patient full investigation failed to show an underlying cause, and it seems likely that this is an example of this "idiopathic osteolysis." Gorham et al.[7] were able to find only 16 examples of disappearing bones reported in the literature, and they added 2 examples from their own experience. In the recorded cases, trauma seemed largely incidental, although sometimes a pathological fracture was the first indication of bone resorption. When a number of bones were affected, they were usually in the same limb. Progress of the condition was slow and variable; sometimes it stopped, but occasionally it ended fatally. Biopsies suggest that a common feature is an overgrowth of thin-walled blood-vessels, and the osteolysis may be directly related to this angiomatous change. The picture of complete and very localised destruction of bone accords well with this view, and seems to distinguish the condition sharply from the post-traumatic atrophy first described by Sudek.[8] There are good grounds for accepting massive osteolysis as a distinct clinical entity, although its cause and its relation to other forms of osteolysis are obscure.

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Public Health

OLD FOLKS AT HOME

The Kinds of Help They Need *

Sir SELWYN SELWYN-CLARKE
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BY far the larger proportion of old people remain in their own homes: indeed less than one in ten are accommodated in long-stay hospitals or in welfare hostels. This is as it should be; for it is both natural and commendable that, at the end of their lives, old people should want to remain in surroundings familiar to them. We must recognise, however, that many can do so only on one condition—namely, that when their powers are failing they receive appropriate help.

FAMILY, NEIGHBOURS, AND VOLUNTEERS

In such circumstances we think first, of course, of families and relatives. But families are on the average much smaller than they were fifty years ago and the individual responsibility for caring for elderly parents is correspondingly heavier. Moreover, sons and daughters often go to live in some other part of the country or go abroad, leaving the old person all alone.

A second line of defence is the good neighbour. In times of full employment far fewer persons stay at home, and many wives do part-time work in factories and thus have less time for the neighbourly turn to the old person living next door. Nevertheless an immense amount can still be done by voluntary effort, both individually and through old people's welfare committees and Darby and Joan clubs which provide means whereby the aged can enjoy social intercourse and be helped by and help each other.

In Swindon the different streets have been assigned to volunteers who make themselves responsible for visiting—once, twice, or more often, every week—all the old people in those streets who have expressed a wish to be visited. This ensures at the very least that no old person, living by himself and falling suddenly ill, will lie helpless for days till death brings release. Needless to say, not everyone wants to be visited by a stranger, however well-wishing; but most old people welcome visitors who are obviously out to do their best to bring a ray of sunshine into a drab and lonely place and who are not snoopers or busybodies. A visit "after hours" is especially appreciated, and many an old person is thankful for the kindly gesture involved in the visitor making an evening cup of tea, helping grannie to get to bed, filling the hot-water bottle, putting the commode handy, lighting the safety night-light, and so on. Similar visits in the earlier part of the day enable old people with a tendency to become bed-bound to get washed and dressed and into a comfortable chair or even on to a sunny porch. Help with the week's shopping, with change of linen and laundry, or in getting to the old people's club, the church, the chapel, or the cinema, can do much to brighten an old person's existence.

In some places that I have visited, the Women's Voluntary Services, Women's Institutes, British Red Cross Society, St. John Ambulance Association, and various religious and other bodies have joined together to help to bring comfort to the aged. Some voluntary bodies and local authorities arrange holidays for old people in the country or by the sea; for example, in Devonshire there is a system whereby some hotels at seaside places are willing to take old people at reduced rates out of season.

In some circumstances, despite all the help that can be mustered, it is no longer possible for the old person to remain at home by himself. Sometimes, if the house is big enough, the old person can take in a family, who, in return for free lodging, attend to his needs. In other cases—as has been done so successfully in Exeter and in a few other towns, often with help from the National Corporation for the Care of the Aged—families are persuaded to "adopt" an elderly person and provide board and lodging and care in their spare room at a cost which can be met by the old person, assisted, perhaps, where necessary by the National Assistance Board.

I have purposely started with examples of what can be achieved by voluntary effort, because I am convinced that there is a vast reservoir of this still waiting to be tapped. After all, even as things stand, more than nine out of every ten persons of pensionable age reach the end of their lives without having to go to live in hospitals and welfare hostels; and, if their needs were better known, a great many younger people would want to help them to avoid a painful transplantation to unfamiliar surroundings at a period of life when it is difficult, if not impossible, to strike fresh roots.

HEALTH VISITOR, HOME HELP, AND DISTRICT NURSE

There comes a time, however, when the old need rather more help in their homes than can be supplied from voluntary sources. It is at this stage that the health visitor does such valuable work, although the earlier she is on the scene the better. She can give friendly advice and encouragement which will prevent an old person from becoming house-bound and cut off from contact with his fellow men. She can put him in touch with the various voluntary and local-authority bodies who are in a position to help him in one way or another. Sometimes all he needs is the services of a chiropodist, and these can often be provided through an old people's club. The health visitor can make sure that the old person does not take to living only on tea and bread and margarine and develop malnutrition. She can see whether he needs assistance in keeping his house and himself sweet and clean, and she can arrange for a home help if necessary. An efficient but warm-hearted home help can be a wonderful comfort to the old, especially those living alone.

The health visitor will do her best to keep the old person up and about, so that he does not become bed-bound and is less likely to suffer from chronic constipation, mental deterioration, and incontinence. Should he fall ill, she can keep his family doctor advised and, at the doctor's request, call on her nursing colleague for her skilled assistance. The district nurse may need to arrange for the loan of bedding, sickroom equipment, and so on, all the time coöperating closely with the patient's doctor. Often, too, a patient who returns from hospital will need for a time help from a district nurse and/or a home help. Here, the hospital almoner comes into the picture, making sure that the necessary arrangements are in train before the patient is discharged.

In providing special accommodation for the old, the emphasis should always be on enabling them to remain active members of the community and on preventing their segregation from children and the young and middle-aged. In some county boroughs I have seen housing schemes where, in the midst of family houses, there and bungalows for old people, or ground-floor flats, the upper floors being allocated to young families who can give a helping hand to the old person in an emergency. In others I have seen, in the middle of a housing scheme, a group of single-storey bed-sitting-rooms (with individual kitchenettes and bathrooms) for single and married old folk, with a warden's house

* From an address at the annual meeting of the Exeter Maternity and District Nursing Association on June 9, 1955.

adjoining so that the old person has someone on the spot to help him, if need be. Yet again, I have seen this bungalow arrangement with a sick-bay to which an old person can go temporarily when it is unwise to leave him alone in his house and where he can receive nursing care at night if the occasion demands. I believe certain housing authorities have worked on a basis of reserving one-tenth of their housing for old people.

There comes a time, however, when despite all manner of domiciliary help an elderly person of slender means can no longer stay the course and needs to go to a welfare home. Wherever possible, this home should not be far away from where he lived, so that he can visit or be visited by his family or friends and will not feel cut off from familiar sights and sounds.

In determining when this stage is reached the health visitor plays a particularly important part. She contacts the welfare officer directly or through the medical officer of health, taking special pains to keep the aged person's doctor informed and to consult his wishes.

ILLNESS AND DISABILITY

Where an old person is ill the district nurse, with the help of relatives, neighbours, voluntary workers, and a home help, is often able to tide over the period of illness and to nurse him in his home. Similarly, some welfare homes have sick-bays where a patient can be looked after by the district nurse if he requires more elaborate nursing than the staff of the welfare home are themselves able to give. But when the nature of the illness or the social conditions necessitate hospital care and the family doctor thinks this the only satisfactory means of dealing with the situation, the patient will be removed, with his consent, to a hospital.

Nowadays, happily, old people do not go to these hospitals to die. Quite a large proportion receive active geriatric treatment, with physiotherapy and occupational therapy, and are restored to health and home once more. A remarkable change is taking place in many if not all of the old poor-law infirmaries now used for elderly chronic sick patients, and the dread of entering them is rapidly disappearing.

Some of these hospitals—e.g., the Cowley Road Hospital at Oxford—have a department called a day hospital to which frail ambulants and mentally and physically sick persons of pensionable age go for the day to receive physiotherapy, occupational therapy, and a nourishing midday meal, returning to their homes in the late afternoon. A day hospital of this nature affords great relief to relatives, especially when the old person suffers from mental confusion and cannot safely be left alone in an ordinary house. Once more, if an elderly sick person has to be admitted to a long-stay hospital, it is important that this should be as near as possible to his own home if he has any relatives or friends who might visit him.

Where the patient has been in hospital for a considerable time, he may, of course, no longer have a home to which he can return; and then a place has to be found for him in part III dormitories of a joint-user institution, or in one of the welfare homes which are increasingly being built in the vicinity of hospitals, thus reducing the patient's fear of the unknown and increasing the chance of his keeping in touch with friends and family.

Many old people show mental changes, for mental confusion may be just as much an affliction of old age as hardening of the arteries; but it is well to remember that admission of an elderly person to a mental hospital no longer means that he will spend his remaining days there. At least half the patients over 65 years of age admitted to mental hospitals suffer from straightforward depressive illness that can be treated, and it is an encouraging fact that 9% of patients over 65 are discharged within six weeks, 31% within six months, and 38% within twelve months.

Incidentally, a diet rich in protein and vitamins has sometimes worked wonders in the first few days in the treatment of senile, confused patients who have had to enter a hospital, pointing the way to one of the preventive measures that can be taken to forestall, or at least postpone, the onset of senile degenerative changes. Keeping the elderly person ambulant (ensuring chiropody services) and in contact with human interests through clubs and outings are additional means of retaining mental alertness and a joy in living.

CONCLUSION

In this address I have tried to emphasise three things.

The first is the need for more voluntary effort on behalf of the elderly sick and the aged requiring care. I am certain that many more people would give such help if they knew how much good they could do.

The second, related to it, is the need to develop domiciliary aid of all kinds, both voluntary and statutory.

Thirdly, in planning living conditions, we must do all we can to keep the old people of our community integrated with the younger ones, and not to segregate them in institutions and hospitals unless or until this is unavoidable.

To these points I would add a fourth—namely, the need to coördinate in each area all the different ways in which we are trying to help the aged—so that whatever we do shall be done intelligently and as well as we can do it.

Fog

There has been no evidence that the fog which covered many parts of the country last week has had an appreciable effect on mortality or morbidity. Certainly nothing comparable to the 1952 experiences has been reported. In London calls on the Emergency Bed Service were about the usual for the time of year. Special measures for the care and investigation of fog victims in London had been prepared by the Medical Research Council, but only a few patients were admitted to the beds set apart for fog casualties at St. Bartholomew's Hospital, the Brompton Hospital, Hammersmith Hospital, and the London Chest Hospital. At Barts bottles of ammonia were left open in some of the wards; we referred earlier [1] to the plans for investigating the use of ammonia as a possible means of preventing damage to the lungs by acid vapours.

Epidemic Respiratory Illness in Children

On Christmas Eve there was a sudden demand for beds in the children's hospitals in Liverpool, and special wards had to be opened at Fazakerley Infectious Diseases Hospital to deal with the infants requiring admission. We are indebted to Dr. Andrew Semple, medical officer of health for Liverpool, for the following account of the outbreak so far.

General practitioners and pædiatricians in the area began to see many cases of acute respiratory infection over the Christmas holiday. The condition was described as an acute bronchitis, bronchiolitis, or pneumonia, almost entirely confined to children under eighteen months. In Alder Hey Hospital alone, up to Jan. 3, 57 cases were admitted, 42 with a diagnosis of bronchopneumonia and 15 with a diagnosis of acute bronchitis. Most of the children were not very ill by the time they settled down in hospital, but practitioners reported that in the early stages there was striking evidence of acute respiratory infection. The number of notifications of acute primary pneumonia for the week ending Jan. 7 was 36, compared with 17 for the corresponding week last year. Up to Jan. 3 about 130 cases had been traced and by Jan. 9 the Liverpool public-health department knew of about 230 cases.

Although many children have been admitted to hospital, there are indications that a considerable number more are being adequately treated at home. 1 of the children involved died, and post-mortem specimens have

1. *Lancet*, 1955, ii, 975.

been sent to the M.R.C. Virus Reference Laboratory, together with throat-washings, stools, and blood from acute cases. It is generally felt this is probably a virus infection. It has appeared in all parts of the city. The acute infection seems to be mainly confined to babies although there are some indications that preschool-children over the age of 2 are also affected; and the public-health department is following up the contacts of children admitted to hospital.

In Sunderland about 100 children have been treated at the Children's Hospital in the past month for an epidemic respiratory infection.[1] 40 of them were still in hospital on Jan. 9. There was a similar epidemic in Sunderland two years ago.

Statistical Review of England and Wales

The medical tables of the Registrar-General's Statistical Review of England and Wales 1954 [2] were published last month. Some of the main figures had already been published in earlier returns [3] and in the annual report of the Ministry of Health.[4] The new volume gives details of deaths from all causes and notifications of infectious diseases in 1954, by age, sex, area of residence, and time of year.

Of the total infant mortality in 1954, the loss in the first week after birth accounted for nearly 60%, and the loss in the first three months of life for over 80%. The death-rate of children aged 1–4 years in 1954 was 0·94 per 1000 population. In 1953 it was 1·18 and in 1920 it was 12·08—a decline of over 90% in thirty-four years.

Deaths resulting from accidents in the home and residential institutions continued to increase, and numbered 6617. Of this total 4790 (72%) were deaths of old people aged 65 or over. 4188 of all such accidental deaths were due to falls. Deaths in the home and residential institutions due to accidental poisoning by domestic gases continued to increase—from 461 in 1952 and 554 in 1953 to 614 in 1954. There were 597 deaths due to accidents caused by fire and explosion of combustible material. 687 children under 5 died in accidents in the home and residential institutions—compared with 731 in 1953. Of these, 250 were certified as due to inhalation and ingestion of food and 182 to accidental suffocation in bed or cradle.

Also published recently was the text volume of the Registrar-General's Statistical Review for 1952.[5] This is the official commentary on the civil and medical statistics for 1952, already published.

1. *Manchester Guardian*, Jan. 10, 1955.
2. The Registrar-General's Statistical Review, 1954, part I. Tables. Medical. H.M. Stationery Office. Pp. 375. 12*s.* 6*d.*
3. See *Lancet*, 1955, i, 248, 813.
4. *Ibid*, 1955, ii, 1289.
5. The Registrar-General's Statistical Review of England and Wales, 1952. Text. H.M. Stationery Office. Pp. 256. 8*s.*

Infectious Diseases in England and Wales

Disease	Week ended December				
	3	10	17	24	31*
Diphtheria	25	14	17	13	11
Dysentery	615	680	837	857	559
Encephalitis:					
Infective	6	4	3	1	3
Postinfectious	2	2	..	2	3
Food-poisoning	451	188	210	120	146
Measles, excluding rubella	2757	2819	2982	2482	2759
Meningococcal infection	41	23	30	17	15
Ophthalmia neonatorum	24	27	18	23	14
Paratyphoid fever	6	10	9	6	9
Pneumonia, primary or influenzal	462	517	551	535	652
Poliomyelitis:					
Paralytic	73	87	58	44	43
Non-paralytic	42	43	31	20	19
Puerperal pyrexia	215	221	204	176	204
Scarlet fever	1127	1226	1039	955	856
Smallpox	..	..	..	..	..
Tuberculosis:					
Respiratory	627	655	539	454	476
Meninges and C.N.S.	4	16	11	7	7
Other	75	67	62	63	52
Typhoid fever	6	1	4	2	..
Whooping-cough	1112	1177	1068	941	878

* Not including late returns.

Special Articles

SKIING INJURIES IN NOVICES

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I DESCRIBE here skiing injuries, particularly those to the knee, among 2000 British troops and their families in Austria during the season of 1952–53, and refer to a follow-up of knee injuries sustained in the previous season.

Most of the patients were troops learning to ski; the injuries were sustained from one day to twelve weeks after they had first worn skis.

The majority of the injuries were strains of the knee or ankle, or both (see accompanying table). There were

TYPES OF SKIING INJURY

Type of injury	Cases	
	No.	Percentage of population at risk
Strain of knee	54	2·7
Strain of ankle	46	2·3
Fractured tibia and fibula	5	0·25
1st deg. Pott's fracture	6	0·3
Dislocated shoulder	2	0·1

100 such injuries, whereas there were only 5 cases of fractured tibia and fibula and 6 cases of undisplaced fracture of the ankle. Austrian practitioners at ski centres agreed that this was a typical distribution of injuries in novices; experienced skiers tend to sustain fewer and more severe injuries.

Knee Injuries

Of the 54 patients with knee injuries, I examined and treated 44. All but 1 were followed up for from three to six months after injury. The injuries, which differed from one another only in the degrees of severity, were strains of the internal lateral ligaments of the knee-joint. No patient had a tear of his internal semilunar cartilage.

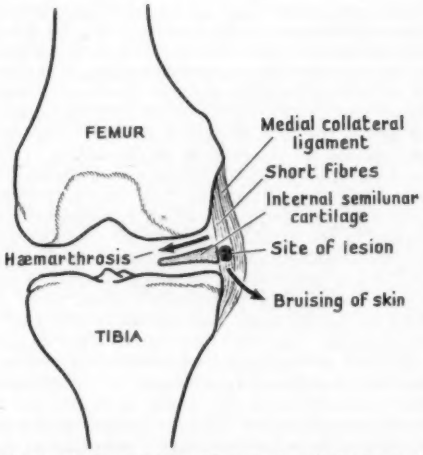
Mechanism of Injury

There were two common causes of injury, both of which are more likely to operate in the inexpert than in the expert skier: (1) crossing the skis when attempting a Stem-Christiania or a "snow-plough" turn (20 patients); and (2) divergence of skis when running into deeper snow (15 patients). In both groups there was a combination of rotation and abduction strains, the rotation being internal in the first group and external in the second; in all cases the abduction strain was apparently the greater force. Injury usually did not take place with the patient at speed, but was a gradual strain caused by the falling body-weight abducting and rotating the knee, the foot being firmly fixed in the snow by the ski. No patient had knee-strain while attempting a Telemark turn, which was not used in skiing instruction.

Many patients in the first group who suffered internal rotation of the knee had strains of the lateral ligament of the ankle, but no patient in the second group had any associated ankle injury.

Diagnosis

In all cases pain was referred to the medial side of the joint, and there was tenderness in the joint-line over, or anterior to, the internal lateral ligament. Patients examined some days after the injury were tender in front of the lower attachment of the ligament, and in severe cases bruises were visible at this point. The



Suggested site of the lesion in skiing strains of the knee, showing directions of extravasation of blood.

hæmatoma caused at the time of injury probably tracked downwards along the line of the ligament.

Abduction of the knee caused pain in all patients. If the pain was severe, preventing relaxation of the internal lateral ligament, an examination under anæsthesia was made. No complete tear of this ligament was found.

Effusion into the knee-joint was present in all cases, and was first detected between one and six hours after injury. The accompanying figure shows the suggested site of the hæmatoma, its probable entry into the joint, and its track along the fibres of the ligament.

In 2 patients there was a more rapid onset of tense effusion, and hæmarthroses were aspirated. 2 other patients had large bloodstained effusions aspirated some days after injury. Patients with hæmarthrosis differed from those with severe strain only in the rate of onset and the tension of the effusion.

20 patients with severe injuries were examined radiographically, but in no case was any flake of bone detached from the insertions of the internal lateral ligament. Within the period of the follow-up no case of calcification in the ligament (Pellegrini-Stieda syndrome) was found.

Treatment

Complete rupture of the internal lateral ligament was first excluded and the fluid was aspirated where necessary. A firm, well-padded crêpe or flannel bandage was applied and the knee kept on pillows in full extension. Early quadriceps exercises were started with particular emphasis on vastus-medialis control; these exercises were supervised by a physiotherapist.

When quadriceps tone returned and the effusion had subsided, the patient started walking and the exercises were intensified. Skiing was again allowed when quadriceps tone was good and there was no return of effusion after full activity. In many cases there was still tenderness in the joint line at this stage.

Early in the season 2 patients with severe strains were treated in plaster-of-paris cylinders for four weeks, in accordance with the practice in some Austrian centres. Both patients were comfortable until the plaster was removed, when considerable quadriceps wasting was found with instability of the knee-joint. Despite physiotherapy for weeks, 1 of these patients had to be physically downgraded.

Follow-up

The time the patients were off full duty varied with the nature of their work and the severity of their injuries; the average time for a soldier on heavy duties was one month. Patients with minor strains of the knee were often skiing again two weeks after injury, but only a few skied with any enjoyment in a shorter time; this may be a useful guide to people sustaining injuries to the knee on short winter holidays. 4 patients with moderately severe strains took part in competitive skiing between one and two months after their injuries.

43 patients were seen at three to six months after injury. All had functionally normal knees and were on full duties. The patient who was downgraded was not followed up. 20 patients still had slight tenderness in or below the joint line on the medial side. 2 of these complained of such tenderness; and manipulation under anæsthesia six months later relieved this symptom. 2 other patients had tenderness after eighteen months but functionally normal knees. No patient had symptoms suggesting a cartilage tear.

Meniscectomy was not carried out on any of my patients.

Review of Previous Cases

In the preceding year meniscectomy had been undertaken on account of skiing injuries in 6 cases at the Military Hospital at Klagenfurt.

CASE 1 had previously had a "soccer" injury with locking of the knee; locking while skiing was precipitated by performing a "kick turn."

CASE 2 had a definite "bucket-handle" tear of the internal cartilage, but he had had knee symptoms, particularly after playing "soccer," before starting to ski.

CASE 3 was operated on two weeks after injury. He had pain and effusion. Extravasation of blood was found under the capsule of the joint; the internal cartilage was removed, but no tear was found.

CASE 4 was operated on a month after injury. He had pain and effusion. The internal cartilage was removed, but no tear was found.

CASE 5 was operated on a month after injury. The internal cartilage was loose peripherally, but no tear was found.

CASE 6 was operated on six weeks after injury, on account of instability of his knee-joint. The internal cartilage was loose peripherally, but no tear was found. This patient tended to exaggerate his symptoms and he failed to coöperate in postoperative physiotherapy. He was off full duty for six months, but when I examined him nine months after meniscectomy he had a functionally normal knee. He skied throughout the next season without his knee troubling him.

Discussion

Wiles (1949) states that the semilunar cartilages are seldom damaged in skiing injuries to the knee, although such an injury is often diagnosed. He says that the injured knee is relieved of the weight of the body at the time of injury, and the cartilage is endangered only by a strain during a Telemark turn, when the weight is on the leading leg. The coronary ligament or the internal lateral ligament is the structure likely to be damaged.

Morrison and Coughlin (1950), reviewing 254 injuries in experienced skiers and novices, reported only 47 strains of the internal lateral ligament. They note that most of the severe injuries of all types were to experienced skiers travelling at high speed. They subsequently found that in 3 cases of knee strain there were cartilage tears, but they do not exclude previous trauma. 1 of their patients had a complete rupture of the internal lateral ligament with disruption of the joint. Their treatment of strains of the knee was more conservative than mine, and they used plaster-of-paris cylinders in severe cases. They do not report any follow-up.

Conclusions

The common skiing injury to the knee in a novice is a tear of the short capsular fibres of the internal lateral ligament. True tearing of the avascular part of the cartilage is unlikely to result directly from the injury, but dislocation of a previously torn cartilage may be precipitated.

The mechanism of the injury, in which abduction is a constant factor, suggests that the internal cartilage is not in danger of being trapped between the tibia and the rotating femur as in "soccer" or similar injuries. This is substantiated by the fact that in two seasons no case of cartilage tear was found that could be directly attributed to a skiing injury. I suggest that the site of the lesion is the attachment of the short fibres of the ligament to the cartilage; the bruising and hæmarthrosis show that the site is vascular, and rapid healing can be expected.

Where it is certain that there is not a complete tear of the internal lateral ligament, patients are most satisfactorily treated by the restoration of quadriceps tone and early mobility. The application of plaster cylinders in incomplete tears causes quadriceps wasting, even if quadriceps drill is practised while the cylinder is on; and the knee is unstable when the plaster is removed.

I would like to thank Brigadier J. H. Huston for permission to study the patients, and Lieut.-Colonel J. M. Matheson, R.A.M.C., for his encouragement.

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In the Mental Hospital *

THE RISE AND FALL OF MENTAL NURSING

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THIS series of articles, and especially those by Dr. Bickford [1] and Dr. Cameron and his colleagues,[2] demonstrating the vital rôle of nurses in the recovery of mental-hospital patients, has brought a breath of fresh air into this electrically charged field. Their nurses achieved much with chronic patients; how much more may be expected from a similar approach to early cases. It is therefore the more urgent to ascertain the deeper cause of the present decline of mental nursing as a profession. This decline, over the past twenty years coincides with the spectacular rise and spread of "modern physical methods of treatment." Is there perhaps an inverse relation between the two?

1956 is a suitable year in which to appraise the present situation, for one hundred years ago was published the most important over-all contribution to the welfare of mental hospital patients ever made: The Treatment of the Insane without Mechanical Restraints, by John Conolly.

Briefly, before the 1830s, as far as this country is concerned, difficult, violent, delirious, or suicidal patients were automatically clapped into various restraining devices ranging in general from chains to strait-waistcoats, and in detail according to the technical ingenuity of the physician. Patients were regularly bled, purged, vomited, blistered, and drugged. That the popular mind erroneously equates insanity with violent behaviour arose in part from the cruelties practised on patients and their reactions to a punitive, suppressing environment.

THE MOVE AGAINST RESTRAINT

The first attempt to establish the study of the insane as a specialty was made by William Battie, incidentally one of the very few psychiatrists to become President of the Royal College of Physicians of London. He wrote that "such unhappy objects ought by no means to be abandoned, much less shut up in loathsome prisons as criminals or nuisances to the society." His kindly spirit led him to proclaim [3] that "the regimen in this is perhaps of more importance than in any distemper." Pargeter,[4] in 1792, wished to "abolish at once . . . recourse to chains and cords," and Arnold,[5] in 1809, felt they "should never be used but in the case of poor patients." The Retreat at York, opened by the Society of Friends in 1796, was the first institution in which insane persons were treated as human beings by a "regimen" of "moral treatment," and thus was the birthplace of all subsequent reforms culminating in the great movement for "non-restraint." Tuke's stirring and challenging account [6] of the practice of the Retreat inspired all subsequent work with the insane and led directly to Conolly's great reform. By the 1830s its kindly spirit had spread to the doctors of Lincoln Asylum. In 1839 Conolly at Hanwell Asylum made the bold and successful experiment of putting into practice the principle of non-restraint in a large mental hospital—acknowledged the world over as the major advance in the history of the guardianship of the insane. The attitude of attendants changed from that of keepers to that of nurses; violence became exceptional; refractory patients took their place and worked in the hospital community; the recovery-rate rose to more than two-thirds of all admissions.

"The great principle of the non-restraint system is to exclude all hurtful excitement from a brain already disposed to excitement. On this principle it abolishes mechanical restraint: and also, on this principle it regulates every word, look, and action of all who come in contact with the insane." [7] The influence of a healthy person's mind became the chief therapy in mental disease, and the mental nurse its most important agent:

"The physician who justly understands the non-restraint system well knows that the attendants are his most essential instruments. . . . They may often be considered, indeed, his best medicines. . . . He confides the most confidential duties to them: he entrusts them with the happiness, by day and by night, of all the patients under their especial care. To control the violent, without anger; to soothe the irritable, without weak and foolish concessions; to cheer and comfort the depressed; to guard the imbecile and the impulsive, and to direct all." [7]

TRAINING OF NURSES AND DOCTORS

Thus the demand arose for mental nurses and their organised training. In 1854, Dr. W. A. F. Browne, at Crichton Royal Mental Hospital, commenced a course of lectures comprising "a full, if popular, discussion of insanity in the different forms, intelligible by the shrewd and sensible, if somewhat illiterate class of persons employed as attendants and nurses." [8] In 1891 the Royal Medico-Psychological Association held the first examinations which "remained for many years the only, uniform national system of training and certification of any body of nurses in any country." † [9]

The training of mental nurses was paralleled by the training of mental-hospital doctors:

"The resort to instruments of mechanical coercion was inconsistent alike with any medical consideration of the various forms of mental disease, and their causes, as it was with attention to the numerous auxiliary or moral means of cure which are so greatly relied upon where the ancient methods of

* A group of articles chiefly concerned with the value of active occupation and work for mental patients and the means whereby it is best provided.

1. Bickford, J. A. R. *Lancet*, 1955, ii, 917, 969.
2. Cameron, J. L., Laing, R. D., McGhie, A. *Ibid*, p. 1384.

† The first final examinations of the General Nursing Council were not held until 1925.

3. Battie, W. A Treatise on Madness. London, 1758.
4. Pargeter, W. Observations on Maniacal Disorders. Reading, 1792.
5. Arnold, T. Observations on the Management of the Insane; and particularly on the agency and importance of humane and kind treatment in effecting their cure. London, 1809.
6. Tuke, S. Description of the Retreat, an Institution near York, for Insane Persons of the Society of Friends. York, 1813.
7. Conolly, J. The Treatment of the Insane without Mechanical Restraints. London, 1856.
8. Easterbrook, C. E. The Chronicle of Crichton Royal. Dumfries, 1940.
9. Dopson, L. *Brit. med. Bull.* 1949, **6**, 228.

control have ceased to be employed. . . . It appeared to me that then only could the proper study of insanity begin; the removal of restraints, and of all violent and irritating methods of control, then first permitting the student to contemplate disorders of the mind in their simplicity, and no longer modified by exasperating treatment. Patients could then be presented to their observation as subjects of study and reflection." [7]

Psychiatrists were for the first time enabled to study and investigate in detail the minds of their patients. This in turn led in 1853 to the issue of the first number of *The Asylum Journal of Mental Science* published "by the Authority of the Association of Medical Officers of Asylums and Hospitals for the Insane." ‡ The further development of psychiatry in the second half of the nineteenth century bears ample evidence of the fruits of Conolly's labours.

THE RETURN OF RESTRAINT

A despondent, perhaps prophetic, state of mind to which Conolly was at times subject led him to fear lest the selfish interests of mankind might lead to reaction, and that much of his work might after all be lost to the world. "It seems to have been in some such mood that at the conclusion of his last work he was led to express an anxious hope, that nothing should be allowed to interfere with its continuation; that no future economy and no delusive theories would ever lead to the abandonment of 'non-restraint' in the treatment of the insane." [10] §

In insanity the dividing line between treatment and restraint is very fine, and Conolly's forebodings were justified. "Chemical restraint of the cells of the sick brain" took the place of the old "mechanical restraint of the body." [11] Thus bromides (1857), chloral (1869), paraldehyde (1882), and barbiturates (1903) were all in turn considered harmless non-addicting specifics for mental disorders, and each allowed restraint disguised as treatment to slip back unobtrusively into the care of the insane. Some recognised the danger:

"The successful argument against mechanical restraint was, that although it kept the patient's body quiet, it really aggravated his malady: the question now which should be considered is, whether chemical restraint does permanent good, or whether by diminishing excitement at the ultimate cost of mental power it 'makes a solitude and calls it peace.'" [11]

Since the 1930s psychiatry, jealous perhaps of the therapeutic advances in general medicine, has seen a spectacular rise and spread of "physical methods of treatment." In various forms such methods have always enjoyed a vogue.‖ Like the drugs which in part they replaced, they also were not abandoned in mental-hospital practice when they failed as therapies. Like drugs they remained as instruments of restraint in the guise of treatment: hypoglycæmic, electrical, and neurosurgical. The frequently made statement that electrical or chemical restraint is essential for keeping the peace in chronic or refractory wards of mental hospitals is shown by the experience of Cameron et al.[2] to be fallacious. They demonstrated once again that better results can be achieved by skilled mental nursing. New drugs continue to be synthesised and with them claims that during their administration disturbed patients require less physical treatments. At the same time reports are published demonstrating reduction in drug bills made possible by more regular use of E.C.T.: "since the introduction of electrical treatment, the modern trend has become more to rely on this in intractable cases." [13]

A KEY POSITION LOST

What does this development mean to the status of the mental nurse, deprived of the very functions to which mental nursing owes its inception—that is, to counter alienation by sustained, kindly human understanding and contact. When patients are controlled or suppressed by drugs or electricity all respect for them as mentally sick persons is lost: "when the patient is tied up, all regard for him ceases." [7]

The latest edition of the Royal Medico-Psychological Association's Handbook for Mental Nurses [13] speaks openly of restraint. It has almost nothing to say on the nurse-patient relationship, which does not appear in the index of the book. To restraint there are three references:

"If a patient shows continued or oft repeated violence, special measures may be necessary. The doctor may consider sedation advisable. . . . This form of treatment is sometimes known as *chemical restraint*."

"Under certain conditions the doctor may occasionally decide in favour of *mechanical restraint*."

"'Sedation' can be effected in three main ways, by *drugs*, by *hydrotherapy*, and by *electrical treatment* . . . it brings the psychiatric patient to a more controlled level of behaviour."

In various parts of the book E.C.T. is recommended as effective in the neuroses, psychoses, and organic states. Can a procedure which covers pretty well all aspects and degrees of mental illness be treatment, or is it restraint? Added to this, two new classes of auxiliaries curtail the nurse's direct responsibility for, contact with, and knowledge of the patient—social workers and occupational therapists. Under such a régime the mental nurse at worst spends her time polishing floors; at best she is allowed to participate in the administration of physical treatments. Her functions are reduced to less than those of a general nurse, and her status and conditions of work are often lower.

The shortage of nurses as well as of doctors for the staffing of mental hospitals is sometimes brought forward as the excuse for widespread physical treatments,¶

"... until, by slow but very sure steps, restraints become the usual substitutes for attention, for patience, for forbearance, and proper superintendence. . . . The tendency to neglect those who are deprived of reason still exists, and demands vigilant opposition. What the old system of treatment by restraint really was ought, therefore, not to be forgotten. . . . Its evils were not imaginary, but real and dreadful. . . . they must remain common, however disguised, wherever the system of restraint remains the subject of eulogy." [7]

Especially in a textbook designed for mental nurses.

Physical treatment replacing shortage of nurses starts a vicious circle of fewer nurses, more restraint disguised as physical treatment, less nursing, fewer nurses, more restraint, and so on. Dr. Cameron and his colleagues have shown how much can be done with the minimum of well-guided staff. Who will have the courage to repeat the experiment on a large scale so successfully concluded by Dr. Conolly in similar circumstances one hundred years ago? He will not find himself short of mental nurses when they are reinstated to their key position.

‡ It is now called the *Journal of Mental Science*; and the association has become the Royal Medico-Psychological Association.

§ The element of restraint is hardly disguised when results of physical treatments are given in terms of "social recovery" or "more controlled behaviour," which significantly appear often in reports of the most permanent form of brain-destructive restraint—leucotomy.

‖ As Fulton [12] pointed out, even the use of electricity (in the shape of the electric eel or torpedo) is "a fine old Roman custom . . . introduced in the first century A.D. by Scribonius Largus." Of course, the operation of trepanning with variable damage to the underlying brain is the oldest procedure known to medical history.

¶ "Dr. Conolly . . . was praised for the abolition of restraint: but it was not this which ought to be admired so much as his pluck and determination in doing away with it at short and definite notice in a county asylum with a relatively small staff, where many patients had been made intractable by the abuse of restraint." [14]

10. Clark, Sir James. A Memoir of John Conolly, M.D., D.C.L. London, 1869.
11. Maudsley, H. The Pathology of Mind. London, 1879.
12. Fulton, J. F. The Sherrington Lectures. Liverpool, 1952.
13. Royal Medico-Psychological Association. Handbook for Mental Nurses. London, 1954.
14. Newington, H. H. *J. ment. Sci.* 1901, **47**, 74.

In England Now

A Running Commentary by Peripatetic Correspondents

AT 2.10 A.M. the other night I was wakened with the news that the girl in the room below had been badly burnt. She was warming herself in front of the gas-fire, when her cotton nightdress caught fire. I phoned the local hospital which I know specialises in burns, and has a large ambulance depot, and asked for an ambulance. I was told politely that I must dial 999. I rang 999, gave the address, and again asked for an ambulance. The operator, having taken down the name and age of the patient and my own name (though not age), announced that an ambulance would come immediately.

The owner of the house and I were administering hot sweet tea and packing a suitcase for the patient when there was a loud bang on the front-door. Four firemen were standing on the door-step, and, parked in the road was an immense fire-engine complete with a giant ladder. They inquired where the baby was. I explained there was no baby, and no fire, but eventually it transpired that the fire service turns out for every emergency call involving burns, whether or not there is a fire to be put out. The house shook as four pairs of heavy boots lumbered upstairs. The officer in charge made a note of the name and age of the patient, the name of the landlord, and the age of the house. He pointed out there was no fire-guard on the gas-fire. Finally he turned his attention to the girl on the bed, shivering from shock and cold. One of the men stamped downstairs, to return a minute later with a small cardboard box containing a sterile sheet. Then a police inspector suddenly appeared in the room, presumably let into the house by the fetcher of the sterile sheet. While I draped the sheet round the patient's burnt limbs, the police officer asked the now customary set of questions. He also commented on the absence of a fire-guard.

The room seemed a trifle crowded with five men and two women standing round the bed, but it became even more so a few moments later when three ambulance-men joined the party. Their senior officer once again asked the name and age of the patient, the name of the landlord, and the age of the house; and he, too, looked accusingly at the gas-fire and muttered something about no fire-guard. After these formalities, the patient was taken downstairs, accompanied by eight men, one stretcher, and a night-bag. Neatly parked outside the house were the fire-engine, the police-car, and the ambulance. It was then 3 A.M.

We were on the point of creeping back to bed when there was another hammering on the door. Three shame-faced firemen and one policeman stood in a row. The policeman wanted to know if we had the address of the patient's parents; the firemen had left something upstairs and went up to fetch it. It was the little cardboard box which had housed the sheet.

* * *

We flew from Accra to Freetown on a Sunday, stopping first at Abidjan (Côte d'Ivoire). The local French had turned out in force to meet a plane from Paris. In the restaurant the men, in very short shorts, sipped *apéritifs* and greeted all and sundry with perfunctory handclasps, while the women, wearing tropical clothes with all the *chic* of the Rue du Faubourg St.-Honoré, chatted vivaciously. We *transitaires* enjoyed an excellent hors-d'œuvre, followed by a *ragoût* and a bottle of Beaujolais. The only solecism was the *toilette* which was distinctly superior to metropolitan standards.

Our next stop was Robertsfield. Liberia is not an American colony (though cynics sometimes call it a colony of the Firestone Tyre Company), but it has a historic link with the States, and Robertsfield is run (with superb efficiency) by Pan-American. Well, if the French have gallicised their colonies, Pan-Am. have certainly americanised Robertsfield. An air-conditioned passenger lounge, a large portrait of President Eisenhower with a warm-hearted message to travellers below it, and cahfee or 'Coca-Cola' for those in need of refreshment. The final touch is provided by African airport police, in American uniform, each with a revolver on his hip and a sloping bandolier of cartridges.

* * *

As it was my third visit to the outpatient department, I knew the procedure and could watch with haughty disdain the new patient who sat and moved along with the old patients. I was surprised that she was not severely reprimanded, as I had been when I did the same on my first visit. But perhaps she was let off because the young clerk was not there to marshal us on this occasion. This was lucky, for I was able to collect my notes in front of those who were waiting patiently for authority to direct them. I took my place in the line of waiting patients and in an attempt to estimate the delay before seeing the specialist I asked my neighbour, a solid late-middle-aged woman, if she had been here long. I was appalled at her reply "Three years," but reassured when after a pause she added "off and on," and then dismayed again when, entirely disregarding Hippocrates and all that, she expounded her views of her husband's illnesses.

It transpired that it was he who was ill, but if she didn't come with him, he would sit in the hospital all day and let everyone go in front of him. He suffered from his nerves, an ulcer, and glaucoma. The acidity from the stomach accumulates in his body and burns his nerves which make the eye contract so that it almost blows up at times. The hospital had given her some wonder drops which you could only get from the hospital. They were called Tid and had to be given three times a day; she had tried to get some from the chemist for a friend, but the chemist had never heard of them. Amazing how these ignorant people were allowed to practise in the health service at all. Where would we be without the hospital doctors?

Take her own case, she developed a giddiness of her eyes (if I got her) about 18 months ago, or was it 19? Anyway she went to her own doctor and he said it was her nerves; then she insisted on seeing an eye specialist at the hospital and he said there was nothing the matter with her eyes. Just fancy, if she hadn't seen the specialist she might still be having treatment for her nerves. Not that she really believes in all this nerve business. Take her own husband, she always tells him it's only will-power. If he really put his mind to it he needn't have any of this ulcer or glaucoma business.

At this moment Sister appeared and said, "Doctor Blank, would you come in now please." As I left my loquacious companion I heard her turn to her next neighbour and remark

"Fancy him being a doctor. I wouldn't have told him all my ills if I'd known. Doctors aren't allowed to discuss illness you know, the Minister of Health might strike them off if he caught them. That's why some have secretaries, so they can tell the patients what's the matter with them . . ."

* * *

Newspapers treat the hospitals more and more as though they had ceased to be institutions; but why, oh why, when someone goes to hospital, are there still only two alternatives open to him? He is either "detained" or "allowed to go home." Even the Liberal dailies suffer from this aberration.

* * *

In our sanatorium we sent a lot of patients home on leave for Christmas; in fact, in one ward, only six Pakistanis and an East African were left. But the carol-singing nurses who visited the ward at midnight on Christmas Eve firmly started their programme with "Christians Awake!"

* * *

At today's domiciliary visit the consultant wanted an electrocardiogram. To everybody's surprise the electrocardiograph produced sweet melodies from the nearby television station instead of T waves and Q waves.

G.P. (jokingly): "You'd better ring them and tell them to stop their show."

Cardiologist (seriously): "I certainly will." And he did.

The reply was: "In one and a half minutes we will stop for two minutes." And they did. The E.C.G. was taken without any interference.

Cardiologist: "You'd better ring them again and tell them that we are grateful for their coöperation."

G.P. on the phone: "Thank you very much for stopping, we managed fine in those two minutes."

B.B.C. Engineer: "Good show."

Letters to the Editor

CORONARY-ARTERY DISEASE

SIR,—Dr. L. Schmidt's comments (Dec. 24) are best answered by relating some results of short-term fat-feeding experiments which have been conducted under controlled conditions on volunteers with low serum-cholesterol levels. The details of these experiments will be published soon.

The basic diet has consisted of maize meal and white bread (estimated fat content 3% of calories) supplemented by sugar and casein in order to maintain by suitable adjustment an isocaloric and isonitrogenous state. To this diet various fats and oils have been added in amounts to increase the percentage of calories derived from fat from the basic 3% to approximately 45% and on occasion 70%.

Under these conditions, animal fats in the form of beef dripping, butter, eggs, and beef were associated with a prompt and significant elevation of the serum-cholesterol level. No elevation followed the feeding of equivalent amounts of vegetable oils such as olive oil, sunflower-seed oil, and ground-nut oil. When ground-nut oil was fed in the hardened or hydrogenated form a prompt rise in the serum-cholesterol level occurred. One result of the hydrogenation process is the destruction of certain of the highly unsaturated fatty acids, which form only a small percentage of the fatty-acid composition of the animal fats used above.

By fractional crystallisation we separated out a highly unsaturated and a saturated fatty-acid fraction from sunflower-seed oil. We fed the ethyl esters to a patient whose serum-cholesterol level had been raised by a cholesterol (3·0 g.) supplement to the basic diet. Despite the continued dietary cholesterol supplement, the serum-cholesterol level promptly fell following the feeding of the unsaturated fraction, and an elevation occurred when the saturated fraction was fed later.

In Dr. Schmidt's criticism of your leading article of Nov. 26 on the animal-fat theory of coronary heart-disease reference was made to the feeding habits of the Eskimo. The animal-fat intake of the Eskimo is largely derived from marine animals.[1] Marine oils in the form of fish oil, seal oil, and whale oil approach vegetable oils in their fatty-acid composition, having a high proportion of the unsaturated fatty acids. We have fed seal oil to two volunteers. No elevation of the serum-cholesterol level followed.

In these experiments, then, changes in the serum-cholesterol have been determined by the fatty-acid composition of the fats fed, and the consistency of the results has not been affected by alterations in the caloric or protein intake or by switching from maize meal to "baker's cones," a highly refined maize meal from which most of the germ has been removed. Nevertheless the views held by Dr. Schmidt on maize and bread are somewhat similar to ours, except that we are more interested in the high content of the unsaturated fatty acids in the germ of wheat and maize and not the vitamin-E content. Burr [2] and Deuel et al.[3 4] have shown that the highly unsaturated fatty acids have biological activity in the rat and that the requirement increases as the fat intake increases. There is, in addition, a sex difference in the requirements of young rats.

Compulsory reversion to the use of naturally occurring vegetable and marine oils, due to the scarcity of animal fat and to bomb damage to hydrogenation plants, could, in our view, explain the striking fall in mortality from circulatory diseases in Norway soon after the German occupation. This concept depends on the acceptance of the relationship between the serum-cholesterol level and the incidence of coronary heart-disease, but we fully appreciate that more than one mechanism may be operative.

B. BRONTE-STEWART
L. EALES
A. ANTONIS
J. F. BROCK.

Department of Medicine,
University of Cape Town,
South Africa.

1. Sinclair, H. M. *Proc. Nutr. Soc.* 1953, **12**, 69.
2. Burr, G. O. *Fed. Proc.* 1942, **1**, 224.
3. Deuel, H. J., Greenberg, S. M., Anisfeld, L., Melnick, D. *J. Nutr.* 1951, **45**, 535.
4. Cheng, A. L. S., Kryder, G. D., Bergquist, L., Deuel, H. J. *Ibid*, 1952, **48**, 161.

RECRUITMENT FOR THE OVERSEA MEDICAL SERVICE

SIR,—May I endorse Mr. Seddon's important letter last week? We all must agree that it is the duty of this country to help those parts of the Commonwealth where the medical services are inadequate.

As far as specialist services are concerned, the seconding of registrars can only meet the need to a very limited extent—for two reasons.

Firstly a registrar, however skilled, will not have the same prestige as a consultant; not only will this make it harder for him to carry out his work, but the implication that a registrar is good enough is almost certain to provoke resentment in the recipient country. In some cases in its early days the World Health Organisation made the mistake of sending personnel of inadequate status; as a medical ambassador only the best is good enough.

Secondly, a registrar will inevitably have at least one eye on vacancies at home and will probably think more of the coveted consultant appointment than of his present work.

The only satisfactory way to provide adequate specialist service for underdoctored areas is to second consultants—preferably of some years' standing. Nor should a period of work abroad be looked on as a loss or sacrifice; I both benefited professionally and made many friends.

Finally, important as it is to provide medical aid where it is needed, this aid is as likely to create ill-will as gratitude, especially as the "undeveloped" countries of the Commonwealth become more "developed"; at the earliest possible moment a programme of exchanges should be substituted for aid.

Robert Jones & Agnes Hunt
Orthopædic Hospital, Oswestry.

ROBERT ROAF.

BLOOD-TRANSFUSION

SIR,—With much of your leading article of Dec. 31 we would agree, but the last paragraph has been too much for us and we must protest against it. You quote Dr. French as saying that junior residents should not do emergency cross-matches, but that the pathologist himself should be called out if necessary. You continue, with slight horror in your voice lest Dr. French should hear, to reveal the fact that in *some* hospitals technicians are called in for emergency cross-matches. We declare now for all to hear, including Dr. French, that this has been the practice in this and very many other hospitals for some time, and that it is as safe and as satisfactory as any other arrangement, provided the technician is always able to call in a pathologist in any case of difficulty.

It has long been known that the greatest dangers in grouping and cross-matching are ignorance, haste, and the little slips and errors that human flesh is heir to. These dangers are best overcome by good training in the technique and constant day-in and day-out experience. Technicians have this training, and for the benefit of those who still regard them as "lab-boys," able to do the washing up but good for little else, we would point out that the final I.M.L.T. hæmatology examination is a searching one based on a comprehensive syllabus in which all aspects of transfusion laboratory work are covered in some detail, and in which mistakes are not tolerated. Technicians also have the experience, for they do the vast majority of the routine work both in hospitals and in the National Blood Transfusion Service—and you have yourself commented favourably on the accuracy of the

blood-grouping work done by the latter. No medical qualification can compensate for lack of the necessary technical training or for lack of constant experience in the routine. For this reason junior residents are entirely unsuitable for emergency work of this nature, and even pathologists are likely to be less safe than technicians; for there are few, however knowledgeable they may be in transfusion work, who put up routine cross-matches. Resident clinical pathologists are in this respect better than the clinical residents, but it must be remembered that they are frequently in their first laboratory post and have neither the training nor the experience in serology of a qualified hæmatological technician. What are their advantages over qualified technicians who daily undertake this work and who can call on a pathologist in case of need? Is it not nonsense, therefore, to say, as you do, that hospitals without resident clinical pathologists are thereby unfitted to undertake work in which transfusion is often needed?

If, as you suggest, a pathologist is necessary for emergency grouping and cross-matching, it follows that he is also necessary during the day-time when it is no less important and no less dangerous. As we employ two technicians full-time and one part-time on grouping and cross-matching, it would be necessary for the total medical staff of this laboratory to spend its whole time doing transfusion work. And even you, Sir, in spite of your leader, would agree that this would be absurd.

We seriously question the wisdom of dividing patients into "dangerous" and "safer" recipients. Dangerous recipients there certainly are, but would it not be better to avoid the use of the word "safer" lest it mislead anyone into believing that the cross-match is a mere formality? You suggest that when "safer" recipients are to be transfused the emergency can be coped with by "the normal resident staff" with Dr. Discombe's book to guide them. We presume this means the clinical residents, and we feel that we cannot do better than quote Dr. Discombe's good counsel on this subject; on p. 14 he states:

"If a clinician is faced with an exsanguinated patient and himself has to decide to administer blood transfusion, to group the patient, and crossmatch a bottle of blood, he must be exceptionally experienced or exceptionally phlegmatic to endure the long wait between starting the test and reading the result. Even British phlegm is rarely equal to this task, so that a young clinician hurries over his tests. . . . He may easily make an error in the Rhesus group and miss a low titre antibody, or sensitise some young girl to the Rhesus factor and make it unlikely that she will ever have healthy children. Every hospital, therefore, must see that the junior clinician on duty need not, whatever the emergency, select blood for his own patients."

In conclusion, we would like to say that if a transfusion were to be done on one of us (which God forbid) we would be happiest for the cross-match to be done by a technician trained and experienced in hæmatology, knowing that his day-to-day familiarity with the technique would guard to a large extent against slips, and knowing that if he was unable to get a perfectly clear cross-match he would call in the other of us, who would decide what was to be done. We should be considerably less happy for the cross-match to be done by anyone, pathologist or not, not constantly engaged in this work, however great his theoretical knowledge of blood-group serology. Technician and pathologist each have their part to play. The former carries out prescribed tests and in the vast majority of cases is able to issue blood with an assurance that there is no important incompatibility present. In the minority of cases where a clear cross-match cannot be obtained, it is for the pathologist to decide what is to be done next, as here the risks of transfusing and the risk of not transfusing the patient have to be carefully weighed. The use of a pathologist for routine cross-matches is rather like the use of a steam-hammer to crack a nut—not only wasteful of power but also not in the nut's best interests.

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JOHN B. PENFOLD
J. W. NICHOLAS.

SIR,—May I support your commendation of Dr. George Discombe's booklet.[1] In it he expresses the hope that it will be read by housemen. It should also be studied by pathologists and technicians; but above all surgeons should read and re-read it, for the commonest cause of laboratory error in blood grouping and matching, as Discombe has pointed out,[2] is the worrying clinician who wants blood at short notice.

In desperate emergencies group-O Rh(D)-negative blood (which should be available in every blood-bank) should be used without direct matching; when the urgency is somewhat less, rapid methods of grouping and direct (cross) matching, taking about half an hour, are used. It cannot, however, be overemphasised that the quicker the method the greater is the risk to the patient, not only of a transfusion reaction but of death. Zeitlin[3] states that 1 death results from 2000 transfusions.

In your leader you imply that properly matched blood can be provided within two hours from the arrival of the specimen in the laboratory. This is correct only if the patient's group and Rh(D) type is already known and if separated serum is available.

If these are not available, using modern approved technique two hours' incubation is necessary to determine the group and the type of the patient's blood.[4] After this has been done, two more hours' incubation is necessary for the direct match (the so-called cross-match).[5] So, assuming the patient's group and type are unknown, a minimum of four and a quarter hours of laboratory working-time is needed (the quarter of an hour being allowed for washing the donor's cells, setting up the tubes, and reading the results). To expect blood to be ready in four and a quarter hours presupposes that a pathologist or technician will be ready to drop whatever he is doing and deal with the request.

Many clinicians, remembering the days when blood was grouped on a tile and matched on a slide in a matter of minutes, but forgetting the not infrequent transfusion disasters, feel that pathologists today are being unreasonably difficult. Not infrequently requests for blood for non-urgent cases that are to be operated on arrive so late that there is often less than four hours' working-time. In such circumstances the pathologist should urge the postponement of the operation unless he is prepared to risk a transfusion reaction or fatal catastrophe. To my mind it is unfair that he or the technician should have to take the responsibility for the surgeon's thoughtlessness.

Many pathologists would not agree with your paragraph in which you question the reliability of technicians to do grouping and direct matching. I am convinced that properly trained and experienced technicians who have had recent practice in the work are entirely reliable. A technician or a junior pathologist in doubt or difficulty should always be able to get the help of an experienced pathologist.

The technician and the pathologist should be treated fairly by the clinicians; and, as Dr. Discombe stresses, they should also be supplied with the essential information about the patient without which the laboratory worker may be seriously handicapped.

Pathology Department,
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R. AIDIN.

SIR,—In your leading article you quote me (p. 1376) as having uncompromisingly said[6] "that junior residents should not be called upon to perform cross-matching tests, and that if necessary 'the pathologist must be got out of bed to perform this heavy and responsible task.'" The article proceeds: "We wonder

1. Discombe, G. Blood Transfusion: a Guide to the Practice of Transfusion in Hospitals. London, 1955.
2. Discombe, G. *Lancet*, 1952, i, 734.
3. Zeitlin, R. A. *Nursing Mirror*, Nov. 19, 1954.
4. Dunsford, I., Bowley, C.C. Techniques in Blood Grouping. London, 1955; p. 161.
5. Dunsford, I., Bowley, C. C. *Ibid*, p. 177.
6. French, A. *Med-leg. J., Lond.* 1955, **23**, 93.

what he would say to the practice, which some hospitals have to adopt, of sending for a technician to perform this work after hours."

It is true that I used similar words during the debate following Dr. Loutit's address to the Medico-Legal Society last May, but I should like to amplify that by quoting further from the report in the *Medico-Legal Journal*.[6]

I asked the lecturer if he agreed that "cross-matching and grouping should never be undertaken by any doctor unless he had had adequate training and experience in this highly technical and potentially dangerous procedure." Dr. Loutit replied that "he would say that cross-matching should be done by the most expert man available and if he was in bed he was available." This would appear to include a competent technician who might well, as Dr. Shillitoe says (Jan. 7), have more expert knowledge and experience than a junior house-officer of the hazards involved.

Dr. Loutit also said that "he could see that under certain circumstances it might be right that a house physician, even although technically unskilled, should make the best possible attempt to do the grouping and cross-matching. It is a case of balancing the hazards, when in the absence of a transfusion the patient would die."

Dr. Discombe's book [1] will be invaluable to resident doctors confronted with this difficult decision, and I hope it will be made freely available to them by all hospitals where such cases may arise.

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ALISTAIR FRENCH
Secretary.

DISTURBANCES OF CARBOHYDRATE METABOLISM CAUSED BY ALCOHOL

SIR,—The observation by Dr. Hunter, Dr. Merivale, and Dr. Smith (Dec. 31) that "disturbances of carbohydrate metabolism, shown by the two-dose glucose-tolerance and the pyruvate-metabolism tests, were found in . . . 7 alcoholic patients" confirms the results reported by K. C. Murfitt and myself to the Association of Clinical Pathologists in October, 1954. Our results were based on investigation of 47 male and 17 female alcoholics in 1953 (group I) and 42 male and 12 female alcoholics in 1954 (group II), all under the care of Dr. M. M. Glatt at Warlingham Park Hospital. In our paper we said:

"The patients of group I of both sexes had had vitamin-B_1 treatment when their blood was examined. Of the men, 42 were tested and none showed an abnormally low value. Indeed, a number showed abnormally high values—evidence of more than adequate medication. Of 15 group-I women examined, 4 had abnormally low cocarboxylase values. In 1 case thiamine deficiency was confirmed by an abnormal response of the blood-pyruvate to glucose administration. In spite of an adequate cocarboxylase level, 14 of 46 group-I men had high blood-pyruvate levels, suggesting that the mild exercise they had taken to reach the laboratory had overtaxed their not fully recovered cocarboxylase mechanism. Similarly, 5 of 16 women of group I had high pyruvate values.

"The patients of group II had not had vitamin-B_1 treatment and were all bled fasting and in bed. All had normal pyruvates. 2 men and 5 women had abnormally low cocarboxylase values.

"These results indicate that this type of alcoholic is prone to add thiamine deficiency to his liver dysfunction."

Our methods of conducting the pyruvate-metabolism test and of estimating blood-pyruvate were the same as those of Dr. Hunter and his co-workers. We estimated blood cocarboxylase, which is a measure of the body's thiamine status, by the method of Kay and Murfitt.[7]

Mental Hospitals' Group Laboratory,
West Park Hospital, Epsom, Surrey.

W. W. KAY.

7. *Biochem. J.* (in the press).

IN THE MENTAL HOSPITAL

SIR,—One imagines that our predecessors in psychiatry of a hundred years and more ago would have been encouraged and perhaps amazed to see that some of their beneficial ideas even today required emphasis, and perhaps re-discovery, in the pages of your journal. May I quote, for example, from the case-notes of Frederick Needham, describing his treatment of one Susan Appleyard.

This girl was admitted to this hospital in 1853, when she was 20. She was described then as restless and laughing unmeaningly, and by 1858 she had sunk, it is stated, into a state of the most complete dementia; wherein she lay coiled up, moaning dismally. Needham wrote on March 28, 1859: "This case is unchanged. She still pulls her dress over her head, and lies coiled up in corners of the room."

On April 12, 1859, Needham wrote: "I this morning went into the gallery . . . and made her—opposed a good deal at first—allow herself to be washed, her hair to be brushed, and then took her with me at first by main force into the gallery and garden. I walked her about for about half an hour in the garden, had her dressed in new petticoats, a new dress, new boots and new stockings, and placed her in a superior gallery in a chair, before a table on which there was dinner, and put a knife and fork into her hand, telling her that I should insist upon her doing everything she was told, and should if need be make her do so. I also said that she had to come amongst ladies and into a better gallery, and that therefore she must behave herself as she should in better society and in better apartments. She ate her dinner quietly, spoke sensibly, evincing much more intellectual power than one would have supposed her to possess, and then as soon as the meal was concluded she proceeded, and with much dexterity, to wash up the plates etc. There was no more drawing up of the dress, no more lying down, but she conducted herself to the surprise of everyone well and correctly. Her treatment thus commenced, I purpose continuing, and have ordered the attendants to never let her lie down or have her dress up, to give her a good bed; to take her each night to the water closet before bed-time; to take her into the garden and greenhouse daily, and to get her to work as much as possible; to call her Miss Appleyard and to treat her as if she were quite changed. Should the treatment in this case succeed it will be one of the best instances of humane and kind moral treatment as successful in cases even of the most confirmed and degraded dementia, and will indeed endorse the old motto, applicable also to insanity, nil desperandum."

A year later Needham referred to this patient as "clean, quiet and orderly in her habits; looks well and is cheerful, happy and contented."

Needham was an unusual man, and one might take many examples from his notes and his reports of practices which have been more recently regarded as modern: for example, the use of water-colours as an adjunct to occupational therapy; and the establishment of a patients' discussion club, which met fortnightly in the hospital, and which indeed published abstracts of its meetings in the hospital periodical called *The York Star*. Needham, who pointed out that this printed publication owed its origin to the earlier issues of a patients' journal both at Morningside and at Dumfries Asylum, commented:

"Literary efforts of this kind, which now form so important a feature in the moral treatment of the insane, are useful not only as a means of employment and mental exertion, leading to the evolution of coherent ideas and the interruption or repression of morbid trends of thought; but because they furnish subject matter for general conversation and in this way beneficially influence a wider circle than that immediately engaged in them."

All was grist to Needham's mill, from his contemplations on the possible use of powdered charcoal as a deodorant in the long-stay wards to his more general reflections on the hospital and lunacy policy.

There is, however, one short sentence of his, taken from his 1871 report, which may perhaps sum up both our current conceptions of the "therapeutic community" in a mental hospital and former ideas of the

"moral treatment" of insanity. This sentence reads: "The insane man is too often a sane man decivilised, and to him the various processes of civilisation have again to be applied."

Bootham Park, York. ARTHUR BOWEN.

PULMONARY EMBOLISM

SIR,—In your leader of Dec. 31 there are statements which are at variance with experience in this hospital and which I fear may be misleading.

You state "that most lethal emboli strike with dramatic suddenness, bringing vicious chest pain and hæmoptysis before any diagnosis of limb thrombosis has been made." It is true that many fatal embolisms occur without recognised warning, but surely chest pain and hæmoptysis are not signs of the rapidly fatal embolism but rather of the embolism which the patient survives, and depend on the development of local congestion and pleurisy. Although many embolisms, as you say, are almost instantaneously fatal, there are others in which death is delayed for a few hours and may be averted by treatment. If anything useful is to be done for these patients the diagnosis should be made and treatment started at once. In my experience neither pain nor hæmoptysis is to be expected in the early stages after a large embolism. The important features of such a case are sudden collapse and signs of obstruction in the right side of the heart.

Of more importance is your statement that there is statistical evidence for the view that "as it is the first embolism that kills, if the patient survives he has little to fear from later ones." You do not give the source of this evidence, but in an investigation which was undertaken in this hospital and reported in your journal before the introduction of current methods of treatment,[1] out of a total of 157 pulmonary embolisms only 34 were fatal in the first attack. Of the 123 survivors of an attack of embolism 10 died of subsequent attacks. A mortality-rate of 8% in the survivors of the first embolism can hardly be regarded with equanimity.

University College Hospital, London, W.C.1. R. S. PILCHER.

HEALTH CENTRE OR GROUP PRACTICE?

SIR,—The main point we wish to make appears to have been missed by Dr. Stephen Taylor (Dec. 31). The provision of premises for group practices is being hindered by such persuasive statements on what constitutes the needs for "efficient general practice" as Dr. Stephen Taylor has put forward. He says that anything less costly than the Harlow centres can be got only by making "real sacrifices in efficiency"—which implies that health-centre practice on the Harlow scale is in fact the cheapest efficient way of conducting general practice. As a group of some years' experience we beg to differ.

We omitted to say in our first letter (Dec. 17) that about 60% of our finance was required for new building. The remaining 40% comprised the purchase and the rebuilding and adaptation of an existing house. Had a suitable central site been available for new building, our cost per patient at risk would have come down further by three or four shillings.

We have no intention of criticising the Harlow centres; but Dr. Taylor's arguments are liable to make general practitioners and planners believe that nothing less will do, and that much which is inessential has received the stamp of approval and therefore must be essential.

In our earlier letter we showed that the widely publicised de luxe standards in premises for general medical practice can be stripped down to basic and economically achievable proportions—to 13*s.* 3*d.* as against £1 per patient at risk. We know that just like us, there are groups of doctors up and down the country working without sluice or specimen-examination rooms, and without a hall for a waiting-room or pram shelters—and working in excellent harmony with local-authority services without special rooms for antenatal and baby clinics.

Let the Nuffield Trust carry on its wonderful work; but it should not be thought that less costly ways are necessarily less efficient.

C. E. MUNRO
E. V. KUENSSBERG
A. R. LAURENCE
G. MACNAUGHTAN
A. H. D. LARGE
G. IRVINE.

Edinburgh.

1. Pilcher, R. S. *Lancet*, 1939, ii, 629.

MENTAL HEALTH SERVICES

SIR,—In your note on a New Occupation Centre in Leeds for Mentally Handicapped (Dec. 31), Dr. Z. P. Fernandez, chairman of the Leeds mental health services subcommittee, is quoted as saying that Leeds spent more in the mental-health field than any other local authority in the country, averaging £103 per 1000 of population, as against £7 or £8 in other areas. All credit to Leeds for its fine record in mental health—but the statement does scant justice to other local health authorities. The average annual expenditure on mental health services for county boroughs in England and Wales is £44 12*s.* per 1000 population, and the only authorities with an expenditure as low as £7 or £8 are a few Welsh counties and one Welsh county borough.

Dr. Fernandez also states that Leeds has the highest ascertainment record in the country. Leeds has 3·8 known mental defectives per 1000 population, of whom 3·5 per 1000 are "ascertained" cases. In Bristol the figures are 4·15 per 1000 and 3·8 per 1000 respectively. Is mental deficiency really more prevalent in Bristol, or have we a higher ascertainment-rate? I wonder!

H. TEMPLE PHILLIPS
Department of Public Health, Tower Hill, Bristol, 2. Chief assistant medical officer of health.

MYXOMATOSIS

SIR,—Your annotation of Jan. 7 calls for certain criticism. It suggests that the immediate result of the deliberate spread of this plague is an increase in the yield in rabbit-free areas and that the eventual gains could be much more striking. But surely these figures are drawn from the returns last year when the weather conditions were abnormally favourable; while certain farmers may have profited in this way, others, to whom the rabbit was their livestock, have lost heavily.

When to the balance-sheet is added the price of inferior dead rabbits imported for food at a very much enhanced price as a substitute for the good rabbits wantonly destroyed by disease, when our merchants are paying 22*s.* per dozen for foreign rabbit pelts which they formerly bought for 6*s.*, when we realise that the rabbit was a plentiful, cheap, and wholesome supply of meat for farm-workers and others throughout the land, competing with the high prices for other meat, surely we must think again before we put an undue assessment on the value of myxomatosis.

Recently a scientific farmer, the gist of whose paper is in favour of myxomatosis,[1] has stated that as the result of it we see farms, where the rabbits were the livestock and livelihood of the farmers, "now empty warrens, whose ill-fenced and ill-watered lands are poorly adapted to sheep and inhospitable to cattle—sheep and cattle which many of these farmers cannot afford to buy"; while your annotation admits that "our wild rabbit has qualities that will almost certainly ensure its survival . . . both myxomatosis and hordes of rabbits may be permanently with us."

We then read that "To avoid this and to increase food-supplies, the Minister of Agriculture is pressing on with the designation of rabbit-clearance areas in which occupiers of the land must destroy the rabbits or, if this is impossible, prevent their causing damage." The Ministry of Agriculture has

1. *Birmingham Post*, Dec. 17, 1955.

unsuccessfully used extermination measures for fifty years, at very great cost in value of herds of cattle and flocks of poultry, to get rid of swine-fever, foot-and-mouth disease, and fowl-pest; but it has learnt little or nothing of cure of these conditions though smallpox, cholera, typhoid, plague, and tuberculosis have largely been eradicated without the aid of unprofitable destruction of this type. While the spectacle of numerous rabbits dying of the disease along every road horrified the public the spread of the disease was regarded as despicable and talks of punishment of the ill-doers even mentioned; now we learn from the press notices that the Government seek the result at vast expense.

Since it is admitted by all good farmers that "rabbits are a sign of bad husbandry, bad estate management, and bad government," and that there is land which cannot be profitably used in any better way than for rabbits, why use such infectious measures, the ultimate effect of which cannot be determined? Land will only yield a certain quantity of food for animals, and as long as farmers have not the means to use it profitably let us be thankful for the rabbit rather than seek a barren wilderness.

Birmingham. JAMES F. BRAILSFORD.

ABDUCTOR PARALYSIS AT THE SHOULDER

SIR,—May one offer a short congratulatory note to Mr. Sharrard and Dr. Knowelden on the clarity and usefulness of their paper last week. It became apparent many years ago that to splint the shoulder in abduction was somewhat of a negation of common sense. Paralysed or weak muscles need protection against the over-action of opponent muscles and "over-stretching." Neither of these deleterious factors apply to the shoulder abductors merely because the arm is kept in the natural position at the side of the trunk. Therefore, to abduct is not required.

I have not splinted the shoulder in abduction for simple paralysis for some fifteen years, and have never regretted it. This paper, by the size of its sample—359 cases—and its method of control, provides the proof of my beliefs which my small series could not supply.

Manchester. W. SAYLE-CREER.

ELECTRON-MICROSCOPY OF ATHEROMA

SIR,—The statement by Dr. Keech and Dr. Reed (Dec. 31) that the fibres I depicted (Dec. 10) are reticulin is, I think, a little far-fetched. They claim to see an accentuation of every third component in the banding, but a careful scrutiny of figs. 5 and 8 will show that such accentuations as are seen do not occur consistently at every third component, and can hardly therefore be regarded as significant. They make the arbitrary statement that the aortic intima consists of, besides elastic tissue and amorphous material, fibres 300–900Å in width; but if they will look at my figures 5, 7, and 8 they will see fibres of no more than 100Å in width. My so-called failure to mention elastic tissue was, of course, because I had carefully excluded from my preparations all but the superficial layers of the intima.

My work was designed either to confirm or to refute Professor Duguid's prediction that much of the substance of an atheromatous plaque would show the characters of fibrin, and I think I succeeded in confirming it; but I carefully refrained in the main body of my paper from applying the term fibrin, and I think that Dr. Keech and Dr. Reed are bold in applying the term reticulin. It would be interesting to know by what reasoning they relate the material I obtained from a mass of very dense fibrous tissue to reticular tissue. Incidentally I would like to know how Dr. van den Hooff (Dec. 31) is able to identify as collagen, fibres which do not conform to the recognised electron-microscopic appearance of collagen.

Department of Pathology,
Royal Victoria Infirmary,
Newcastle upon Tyne. C. I. LEVENE.

DOMICILIARY CONSULTATION IN PSYCHIATRIC PRACTICE

SIR,—Dr. Philip Hopkins's letter (Dec. 31) contains informative statistics on psychiatric patients in general practice. Do I understand correctly from the table that none of the five patients diagnosed as schizophrenic were admitted to hospital? If so, further information about the clinical features and course of their illnesses, and of the action taken to help them, would be of interest.

Warneford Hospital,
Oxford. IAN SKOTTOWE.

*** This letter has been shown to Dr. Hopkins, whose reply follows.—ED. L.

SIR,—Dr. Skottowe understands correctly that none of the five patients shown in the table accompanying my letter as diagnosed schizophrenic were admitted to hospital at the time of referral. They were all referred to a psychiatrist, with whom rested the final diagnosis and the decision whether or not to admit them to hospital.

CASE 1.—A 26-year-old man consulted me on June 25, 1951, stating: "I was with a girl friend last night and I suddenly had a terrible desire to kill her." In addition to this there had been feelings of unreality over the previous few weeks. I had known him previously as a rather quiet withdrawn man. Referral to a psychiatrist resulted in the diagnosis of schizophrenia, but while arrangements were being made for his admission to hospital he was arrested on a charge of repeated thefts over the previous few months and ultimately he went to prison for three months. The magistrate was not influenced by the psychiatric report.

CASE 2.—On Sept. 26, 1951, a 30-year-old single woman came to me with a request to be referred to a plastic surgeon. She stated that her nose had been getting bigger for some years and was now interfering with her appearance so much that people were talking about her. She had, she said, previously had plastic operations on her nose in Cairo but the surgeon had made a terrible mistake. She was plainly suffering from delusions and had been unable to work for some time. I suggested that a psychiatrist could perhaps help her, and she agreed to go provided that she did not have to go into "an asylum." The psychiatrist's diagnosis was schizophrenia; and he suggested that she should be admitted to a hospital for nervous disorders. Neither the psychiatrist nor I have seen her since.

CASE 3.—A 31-year-old single woman came asking to be referred back to a clinic she had attended eleven years earlier. At that time there had been delusions mainly associated with men in her bedroom at night; a previous doctor had referred her to a gynæcologist to reassure her that she was still a virgin and was not pregnant—but despite the reassurance she still insisted she was pregnant. Following individual psychotherapy she had been able to continue with her work as a teacher, but her symptoms were worse when she consulted me on March 16, 1953. I referred her back to the clinic as she requested, but before she could resume treatment as suggested she took a job as a teacher abroad. I have recently been told by this patient's mother that she is still working, but lives "a very secluded life."

CASE 4.—On July 13, 1953, a single man, aged 30, asked for a "tonic"—but after a lengthy interview he agreed to go to a psychiatric clinic. I had been seeing him from time to time for the previous twelve months for "supportive" therapy, as he was clearly a chronic schizophrenic; he had been brought up in a foundlings' hospital, had never known his parents, and had no friends. At 14½ years of age, he had been placed in the Regular Army as a band-boy; after nine years he took his discharge, since when he had wandered from job to job. He had been afraid to mix with people as he thought they talked and laughed about him; he always felt inferior and had become completely withdrawn. I referred him for psychiatric assessment, as a result of which it was agreed that I should continue to see him for "supportive" therapy. He managed fairly well by this means for some months, but eventually he left London, and I saw him no more.

CASE 5.—On Dec. 12, 1953, a 25-year-old single man consulted me with a number of symptoms; I had seen him many times during the previous three years on account of various symptoms, mostly associated with anxiety. He lived with his parents, with whom he had never got on well; he had

no friends and tended to be withdrawn. He wanted to paint, but although talented he could not keep any job for long as he was unable to concentrate and could not get on well with his employers or those he worked with. He had feelings of inferiority, lacked self-confidence, and was unable to sleep. I thought he was worse than usual and referred him for psychiatric assessment. He was at first thought to be suffering from a severe anxiety neurosis and was put on the waiting-list for psychotherapy. It was some time before this was started, and after about four months in treatment (weekly sessions for individual therapy) his therapist concluded that the diagnosis was schizophrenia. Admission to hospital for insulin therapy was arranged, and after five months he was discharged considerably improved. A month later, however, I had to have him readmitted by the duly authorised officer when he had an acute schizophrenic breakdown in which he attacked his father and broke up the furniture and fittings in his parents' home. He was discharged in November, 1955, and is now attending a day hospital, where he is reported as doing fairly well; but the report on his behaviour for December, 1955, states: "He is painting well and plans to teach art, but he still wanders aimlessly and is unable to concentrate."

Unlike the consultant, the general practitioner cannot say to his patient that he can do nothing for him; the patient has no-one else to help him, and only too often it is left to the general practitioner to think up some way in which to help even the most difficult chronic patient—with untreatable psychosis or inoperable cancer.

It is only the schizophrenic in an acute episode or the certifiable chronic who is admitted to mental hospital—for treatment or custody. When the mental-hospital specialist's enthusiasm has waned, or when the patient refuses to stay longer in hospital, he is sent home as untreatable. Nevertheless, it is surprising how some of these chronic schizophrenic patients can be kept usefully employed with occasional interviews for supportive therapy. Watts [1] has described well the types of patient that the general practitioner may be called on to look after, and he rightly points out that if it is possible to keep them at home it is often better for the patient, and more economical for the country, to do so. This is the type of case where often the day hospital, as described by Bierer,[2] can be of value, for again it is cheaper to keep the patient in a day hospital than as an inpatient in a mental hospital.

On the other hand, if Dr. Skottowe has any alternative methods he can recommend for the care of these often very difficult and trying patients I will be extremely pleased to know them—for there is very little help to be gained from the standard textbooks on psychiatry.

London, N.W.3. PHILIP HOPKINS.

CONSULTANTS IN DERMATOLOGY

SIR,—Dr. Franklin's generalisation (Dec. 31), based apparently on his experience of one venereal-diseases clinic, that the care of venereal-diseases clinics may be safely relegated to dermatologists does not in the least alter my view, based on knowledge of the work of all the V.D. clinics in this country, that, so far as this country is concerned, such relegation would be a retrograde step.

Dr. Franklin's remark that "the work of the V.D. clinic . . . can be readily learnt by any competent consultant" reminds me of an incident in the 1914–18 war, when I was adviser in V.D. to the War Office.

The D.M.S. of a certain Command, without reference to others, suddenly posted the pathologist of an important V.D. section of a military general hospital for service oversea, leaving that section without anyone capable of doing the V.D. pathology there. The result was a moan from the commanding officer of the general hospital, which produced a "raspberry" from the D.M.S. for the C.O. not having had an understudy available to take the pathologist's place, and an order to "detail a medical officer to proceed to the Military Hospital, Rochester Row, for a few days to learn the Wassermann test." The original pathologist, by W.O. direction, was back in his laboratory within a week of his having been sent oversea. The O.C. the general hospital, about the same time, received an order from his D.M.S. that in future all communications with the O.C., Military Hospital, Rochester Row, must be "sent through this office."

London, S.W.1. L. W. HARRISON.

1. Watts, C. A. H. *Lancet*, 1954, ii, 85.
2. Bierer, J. The Day Hospital. London, 1951.

EXPELLING TAPEWORMS WITH MEPACRINE

SIR,—The rewards from oral treatment of tapeworm infestation with mepacrine have been so constant that courage is rising to leave out some of the ritual hanging on from the old régime with male fern. When driving out a worm lying in the jejunum, is it not enough to make sure that there is no fæcal block to its passage? And can sodium bicarbonate, except possibly in the achlorhydric, do anything to mucus round the worm's scolex?

A boy, aged 4, had a diet of fluids only (with glucose) and 'Milk of Magnesia' $^1/_2$ oz. morning and evening on Dec. 27. On Dec. 28 he swallowed 500 mg. of mepacrine at 6 A.M., washing down each tablet with a sip of water. At 7 A.M. he took milk of magnesia $^1/_2$ oz., and at 9 A.M. he was given a soap-and-water enema. By 9.50 A.M. he had passed the scolex. He did not vomit till 9.40 A.M., after a drink of milky tea. By 2 P.M. he could manage chicken and milk.

Till a tastier drug arrives, it is worth while bearing the bitterness of mepacrine; but has not the time come to wonder what the starving and bicarbonate are for?

Tropical Diseases Unit,
Eastern General Hospital,
Edinburgh. E. LL. LLOYD.

SPORADIC CRETINISM WITH GOITRE

SIR,—Your annotation of Dec. 24 prompts us to comment on two recent publications by Stanbury and his colleagues,[1 2] and to present additional information about a child of the tinker family previously described by us.[3 4]

The evidence suggests that there are at least three distinct biochemical defects in thyroid-hormone synthesis—not two, as you state.

Firstly, there may occur an inability to incorporate inorganic iodide into an organic iodine-containing compound.[5 6]

Secondly, there may be an impaired ability to couple two molecules of di-iodotyrosine to yield thyroxine.[1] In the patient in whom this defect was found, Stanbury and his colleagues did not (as you state) identify mono- and di-iodotyrosine in the peripheral blood, but they did find tri-iodothyronine and thyroxine. In the thyroid gland, however, mono- and di-iodotyrosine were present in very large amounts but thyroxine was detected only with the greatest difficulty.

Thirdly, there may be an inability to conserve the iodine of the iodotyrosyl groups, owing to deficiency of the enzyme dehalogenase, which normally acts within the thyroid gland by de-iodinating these groups and so prevents their loss from the gland. It was in the serum of the patient in whom this defect was found that Stanbury et al.[2] identified mono- and di-iodotyrosine as well as thyroxine and tri-iodothyronine. This was the first time that the spontaneous occurrence of di-iodotyrosine in the peripheral blood was conclusively proved. It seems likely, as you say, that the patients studied earlier by Hubble [7] and ourselves [3 4] may belong to this third group.

During the past two weeks we have been investigating with radioactive iodine an additional member of our large tinker family.

He was first seen two years ago, at the age of 4 weeks, when it was noted that he was goitrous but euthyroid. He has now been admitted to hospital because signs of hypo-

1. Stanbury, J. B., Ohela, K., Pitt-Rivers, R. *J. clin. Endocrin.* 1955, **15**, 54.
2. Stanbury, J. B., Kassenaar, A. A. H., Meijer, J. W. A., Terpstra, J. *Ibid*, p. 1216.
3. McGirr, E. M., Hutchison, J. H. *Lancet*, 1953, i, 1117.
4. Hutchison, J. H., McGirr, E. M. *J. clin. Endocrin.* 1954, **14**, 869.
5. Stanbury, J. B., Hedge, A. N. *Ibid*, 1950, **10**, 1471.
6. Stanbury, J. B. *Ibid*, 1951, **11**, 740.
7. Hubble, D. *Lancet*, 1953, i, 1112.

thyroidism have appeared. The high, poorly-sustained gland uptake of I^{131} and the high protein-bound-I^{131} values are similar to those which we have previously reported in this family group. The findings in this child suggest even more strongly than in our previous cases that a considerable proportion of the plasma-iodine (26·8%) is di-iodotyrosine. Chemical examination suggests that 60·8% of the iodine in the urine is di-iodotyrosine. Paper chromatography of a butanol extract of the urine confirms that di-iodotyrosine is being excreted in substantial amounts. These findings support the view that the members of our tinker family have the same enzymatic defect as that described by Stanbury et al.[3] in their most recent publication.

We agree with you that sporadic cretinism with goitre is genetically determined.[4] Study of the family tree of our patients, fuller details of which we hope shortly to publish, convinces us that the pedigree satisfies the criteria of the simple recessive inheritance of a single gene.

E. M. McGIRR
Glasgow. J. H. HUTCHISON.

ETHYL BISCOUMACETATE AS INHIBITOR OF SICKLING

SIR,—Last year Griffiths [5] reported inhibition of the sickling phenomenon, in a patient with the sickle-cell trait, after administration of ethyl biscoumacetate ('Tromexan'). Since then we have had the opportunity of treating four such patients with ethyl biscoumacetate. Sickling of the red blood-cells was not altered in any way during or up to three days after cessation of the ethyl biscoumacetate therapy. We feel that it is unlikely that the phenomenon noted by Griffiths was related to administration of this drug.

University College of the West Indies, Jamaica, B.W.I. J. A. TULLOCH
K. L. STUART.

UNFAIR TO SURGERY

SIR,—I hope you will allow us to comment briefly upon your annotation on Regional Ileitis (Dec. 17). In the course of this you say: "Resection cannot therefore be regarded as a cure.", and again: "It therefore seems that surgery has no place in cure. . ." Doubtless with the dictum so ably enunciated by the Bellman [9] in mind ("I have said it thrice: what I tell you three times is true") you add yet once more: "but while surgery can offer no cure . . ." In spite of Dr. Cooke's beautifully presented lecture,[10] and realising that two cases are of little significance, we nevertheless feel that these are worth a short mention.

CASE 1.—In 1932, at the age of 20, a medical student began to have attacks of epigastric pain and vomiting accompanied by loss of weight and some malaise. This was the same year in which Crohn [11] and others first described regional ileitis. Four years later Mr. Harold Wilson operated upon this young man and found that the terminal three feet or so of his ileum was involved by a condition which he thought to be tuberculous but which was later correctly identified by Dr. A. H. T. Robb-Smith as regional ileitis. The affected ileum and part of the ascending colon were resected. Nineteen years later this patient is as fit as a fiddle.

CASE 2.—In 1941, at the age of 26, another medical student noticed lassitude, much loss of weight, and generalised abdominal pain. Two years later symptoms of subacute intestinal obstruction were apparent. This patient was by now house-surgeon to Mr. Wilson who, with the help of his surgical chief assistant (case 1), removed some two feet of almost completely obstructed ileum and a severely diseased cæcum. Thirteen years later this patient is as fit as another fiddle.

Your annotation dwells in detail on the steatorrhœa and electrolytic imbalance which accompanies ileitis, but neither of these patients suffers now from disordered bowel function or abnormal stools. Furthermore they can claim, like the Oysters,[12] that "some of us are out of breath and all of us are fat." Both are satisfied that their disease is cured and both believe that surgery cured it.

But then, of course, we were the patients.

London, W.1. MICHAEL HARMER.
Bourne End. JOE BAILEY.

RUPTURED UMBILICAL HERNIA

SIR,—Until I read Dr. de Glanville's interesting article (Dec. 24) on a case of ruptured umbilical hernia, I had no idea that the condition was so rare. So many umbilical herniæ in elderly people have little more than skin and integument covering them that such a disaster has always seemed to me to be more than a possibility. Dr. de Glanville found only five reported cases; to his case therefore I would like to add a seventh.

In 1951 an elderly Italian, in the course of a bout of coughing, felt that "something had gone wrong" with the umbilical hernia which had not so far troubled him through the three decades of its existence. On examining himself he was astonished, but apparently not very alarmed, to find his intestines lying freely exposed under his shirt. He called a taxi and was taken to the Italian Hospital. He was not shocked and seemed a little surprised at the necessity for operation.

After a careful cleansing of the extruded bowel (which included many feet of small intestine and the sigmoid colon) I darned the umbilical hernial orifice with floss silk. The reduction of the sigmoid colon proved a little difficult as it was greatly distended and appeared to be the site of a chronic volvulus: this may well have been a factor in the final rupture. The repair was scarcely more satisfactory than the condition of the tissues on which it had to be done, but nevertheless the old man made a good recovery.

By an odd coincidence this man was readmitted to hospital last week with intestinal obstruction in his recurrent umbilical hernia. At operation the bowel was found to be gangrenous and perforated, with peritonitis involving the general peritoneal cavity as well as an incarcerated sac. The perforation in the bowel was converted into a colostomy, and the general peritoneal cavity drained. The patient's general condition was poor, but a second and equally unsatisfactory repair was attempted. He has survived operation, but his ultimate recovery this time is problematical.

London, W.1. GEOFFREY E. PARKER.

"MUNCHAUSEN'S SYNDROME"

SIR,—If a tallish man, aged 26, with a right facial palsy, a recent right endaural incision, perhaps with thread sutures still in position, old right postauricular scars, and a "crew" hair-cut should seek medical assistance there may be a doctor chancing to read this who will be glad of the following information.

Such a patient was admitted under my care on Dec. 4, 1955, complaining of right parietal headache, a right facial palsy of two weeks' standing, and right aural discharge. He said that he had had three mastoid operations on the right ear within the past eighteen months. In the ward he was found to have a temperature swinging between 99 and 101°F, and as he was extremely intolerant to the suggestion of having a lumbar puncture, having had 11 previously with much pain, I persuaded him to have an anæsthetic to carry out this essential investigation. The cerebrospinal fluid was found to contain 11 white blood-cells per c.mm. and 110 mg. of protein per 100 ml. In view of this and the persistence of the temperature and the temporal headache, and in the absence of sufficient signs to indicate a brain abscess, I explored the right mastoid in the expectation of finding pus in a dead labyrinth, cochlea function having been shown to be absent.

At operation it was found that a most thorough radical mastoidectomy had been already performed. There was no pus in relation to the widely exposed dura mater of posterior and middle cranial fossæ, nor on lifting the dura towards the apex of the petrous bone was any evidence of infection discovered. Partial removal of the promontory of the inner ear revealed only fibrous tissue. The endaural incision was, therefore, closed with thread sutures.

8. Griffiths, F. E. D. *Ibid*, 1955, ii, 20.
9. Carroll, L. The Hunting of the Snark, 1876. Fit the First.
10. Cooke, W. T. *Ann. R. Coll. Surg. Engl.* 1955, **17**, 137.
11. Crohn, B. B., Ginsburg, L., Oppenheimer, G. D. *J. Amer. med. Ass.* 1932, **99**, 1323.
12. Carroll, L. Through the Looking-Glass. 1871; Chapter 4.

From a chance remark our suspicions were raised about the validity of the pyrexia, and inquiries revealed that during the past eighteen months a patient answering his description had been in numerous hospitals (in London, Plymouth, and Dublin); and as late as Nov. 24 he had had a craniotomy at a hospital in London on account of a suspected lesion of the cerebellum or right temporal lobe. None had been found.

On Dec. 14, the day after the mastoid operation described, the patient took his own discharge in hasty preference to investigation by a psychiatrist.

I shall be very glad indeed to help any colleague confronted with this unusual case.

King's College Hospital,
London, S.E.5. S. R. MAWSON.

AN UNWANTED EFFECT OF B.C.G. VACCINATION

SIR,—I have recently started my second year of B.C.G. vaccinating in Swansea. Like many other local health authorities we are vaccinating school-children in the 13–14-year age-group who are Mantoux-negative and have a clear chest radiograph, and whose parents have consented.

A slight alteration in administrative arrangements has given an opportunity of repeating the Mantoux test in a sample of children who were vaccinated in 1954. The reversion-rate seems likely to be very small. I have, however, seen one or two further examples of an unusual, if trivial, consequence of the vaccination procedure which I first observed in 1954. A few children who received B.C.G. vaccination then have a small, red, persisting papule at the site of the post-vaccination Mantoux test.

The only explanation I can find is the use for a few sessions of P.P.D. solution with a phosphate buffer which caused considerable local pain on injection. This particular P.P.D. aroused complaints from other parts of the country and was replaced by a solution buffered with borax and boric acid, which gives rise to no pain. Possibly the former P.P.D. solution, as well as causing pain, produced the papule.

The papule is not a notable blemish on even the fairest skin, but I should be interested to read of other vaccinators who have encountered this phenomenon or of an alternative explanation of it.

ANTONY ESSEX-CATER
Swansea. Deputy medical officer of health.

CERVICAL VERTIGO

SIR,—I was pleased to see that cervical-joint lesions have been recognised as a cause of vertigo. Following a report by Mr. Terence Cawthorne,[1] I pointed out [2] that 15% of his patients gave a history of injury. He believed that the injury damaged the labyrinth, but I was of the opinion that the head injury jarred the cervical joints, and said that there was no doubt at all that manipulation of the cervical joints could relieve vertigo in suitable cases.

In each of the cases described by Dr. Ryan and Dr. Cope (Dec. 31) there had been some form of trauma, and in each there was a latent period after injury before the vertigo developed. I suggest that during this latent period adhesions form round the apophyseal joints, and that it is stretching of these adhesions with the setting up of abnormal afferent impulses there that disturbs the neck reflexes and causes vertigo. Accurate analysis of the intervertebral-joint movements in these cases would probably have revealed the exact site of the joint lesion.

In my experience manipulation of the neck has been most effective in relieving vertigo, and I have noticed that local joint fixations have been released by manipulation. I suggest that the traction which appeared to cause vertigo in the cases mentioned would stretch the adhesions but not break them, and thereby merely irritate the joint lesion.

1. *Brit. med. J.* 1952, ii, 931.
2. *Ibid*, p. 1043.

While a collar may be helpful in some cases, particularly in the early acute phase, it is my experience that manipulation accurately applied to the faulty joint will achieve much quicker results.

London, W.1. ALAN STODDARD.

THALASSÆMIA IN A SCOTTISH FAMILY

SIR,—There are Scottish families whose members have served with distinction in the Navy for generations. They may be said to have "thalassæmia" in that they have the sea in their blood. But no educated man would suspect that thalassæmia is now supposed to mean anæmia characterised by jaundice, splenomegaly, reticulocytosis, decreased erythrocytic fragility, and a mongoloid appearance.[1]

Let us drop this illiterate monstrosity before it defiles medical literature. What is wrong with "Cooley's anæmia"?

London, W.1. HENEAGE OGILVIE.

DANGER—CLINICIANS AT WORK

SIR,—On reading the first issue of your esteemed journal in this Leap Year, I am somewhat disturbed by the conclusions in three of the main papers.

On p. 5, Dr. Doll and his colleagues assure us that, in spite of the century-old custom, dieting with bland foods does not increase the rate of healing of peptic ulcers.

On p. 9, Mr. Sharrard and Dr. Knowelden discuss the ineffectiveness of splinting in the treatment of abductor paralysis at the shoulder—an accepted treatment for many years. In fact, we are told it may even be harmful.

Even worse, on p. 19 Dr. Brodie and his colleagues state that the general carrier-rate of staphylococci is doubled as a result of admission to hospital, and this hospital infection is due to resistant strains. This may partly explain that dangerous condition—pseudomembranous enterocolitis.

When I was a student I faithfully believed my teachers that we had entered a scientific age and that the days of cupping, bleeding, and purging were over, and Semmelweis might rest peacefully in his grave as his task was done.

I am not suggesting that we abolish clinicians. They are a necessary evil; but I would suggest, as a New Year resolution, that all who are interested in preventive medicine (I do not refer exclusively to those in the public health service) should do all in their power to make it unnecessary for clinicians to practise their therapeutic arts.

Public Health Offices,
Ilford. I. GORDON
Medical Officer of Health.

WERTHEIM'S HYSTERECTOMY

SIR,—It will soon be five years since Mr. John Howkins described in your columns his conception of a synchronous combined abdominovaginal hysterectomy,[2] and it is interesting to speculate upon the comparative unpopularity of this procedure today. Probably many gynæcologists have no colleague of adequate experience who would be available to share the operative responsibility at a time convenient to both. Possibly a theatre staff trained in conventional gynæcological procedures might find difficulty in making the abdominal and vaginal fields simultaneously equally accessible. It is certain that many surgeons whose operations are preceded by radiotherapy consider total vaginectomy quite unnecessary.

In the last few months a modified technique of extended vagino-abdominal hysterectomy has been elaborated.

With the patient in lithotomy position a circular incision is made as far up the vagina as seems desirable in each individual case, at least half the canal being removed. The dissection then proceeds as described by Mr. Howkins until bladder and rectum are freed from the cervix and the parametrium is

1. Israels, L. G., Suderman, H. J., Hoogstraten, J. *Lancet*, 1955, ii, 1318.
2. *Lancet*, 1951, i, 872.

displayed laterally. A pack is then inserted, gowns and gloves are changed, and the patient is placed in the Trendelenburg position. Node dissection and dislocation of ureters is performed as usual, but division of the parametrium is then greatly facilitated since the operator can pass a finger from rectum to bladder beneath the specimen to be removed and thus display more clearly the uterine ligaments.

No claim to originality is made for this procedure, which is the logical result of the solitary operator attempting to apply the excellent principles laid down by Mr. Howkins. It has worked well enough in 5 recent cases and, somewhat modified, in a similar number of patients with carcinoma of the uterine corpus. It certainly allows a clear decision to be made at the beginning of the operation regarding the amount of vagina to be removed; it gives better access for the control of bleeding-points deep in the pelvis; and it makes excision of the parametrial tissue safer and more radical for the less experienced surgeon.

Birmingham. W. G. MILLS.

CLINICAL PATHOLOGY

SIR,—One may read with enthusiasm the report, printed in your issue of Dec. 31, of the presidential address by Dr. Allott to the Association of Clinical Pathologists. The vision, balance, and broadmindedness shown in his description of the future laboratory service, particularly with regard to chemical pathology, would be near perfect but for the unfortunate fact that there is not the slightest real indication that administrative change is in the direction to which Dr. Allott points.

He speaks of necessary expansion. Before any would-be trainee or aspiring registrar in chemical pathology binds his future to this specialty he should note that the trend during the past few years has been, not towards expansion, but towards contraction. Since 1948 there have been fewer than 18 posts, including "turnover posts," in chemical pathology advertised; and of these, at least a third have either been changed subsequent to advertisement to non-medical biochemist, or, in a few cases, withdrawn altogether and no appointment made.

The would-be aspirant in chemical pathology would therefore be well advised to note that, as things stand, his chances of a hospital post are small—indeed almost negligible. Furthermore, human nature being what it is, he will seldom be more than S.H.M.O.—however good his work is admitted to be.

S.H.M.O. (chemical pathology).

ECZEMA VACCINATUM

SIR,—Dr. de Salles-Gomes and his colleagues, describing in your issue of Dec. 17 a case of eczema vaccinatum, mention that they have not been able to find any published report of such strict localisation as was found in this case—i.e., limitation of the lesions to the eczematous patches. My experience and that, I believe, of other workers in this country is that such localisation is not so much the exception as the rule. Of ten cases reported by Sommerville, Dick, and myself [1] the eruption was limited to the eczematous areas in eight, while in the ninth it affected an area of acne and in the tenth an abrasion.

The Brazilian workers favour the hæmatogenous spread of the vaccinial infection, with entry through the respiratory tract, whereas in the article quoted we give reasons in support of direct inoculation of the virus. A point of significance is the frequent appearance of enlarged tender glands at the sites draining the infected area, such as is mentioned in the case-report from Brazil: "a hard painful lymph-gland . . . in each crural region." Surely this indicates infection travelling inwards and not outwards.

Infectious Diseases Hospital, Paisley. WILLIAM NAPIER.

1. Sommerville, J., Napier, W., Dick, A. *Brit. J. Derm.* 1951, **63**, 203.

INGUINAL HERNIORRHAPHY

SIR,—May I supplement Mr. Doran's article of Dec. 24?

As an alternative to suturing the conjoined tendon to the upper edge of Poupart's ligament, I reflect an elliptical flap of the anterior rectus sheath with its base on the outer edge of the rectus sheath, and suture the free turned-down edge of this to the upper edge of Poupart's ligament with interrupted nylon sutures. I have used this method on adults for twenty years and have been satisfied with it. An added refinement, which I have not tried, would be to suture the conjoined tendon to Poupart's ligament, leaving the ends of the interrupted nylon sutures long, reflect a flap of rectus as already described, and pass the long suture ends through the free edge of the turned-down flap.

Longtown, Cumberland. ROBERT RUTHERFORD.

MODIFIED QUECKENSTEDT TEST

SIR,—It has long been recognised that occlusion of the internal jugular vein by manual compression slows absorption of cerebrospinal fluid and so causes the pressure in the ventricles and spinal canal to rise. Such manual occlusion is applied in the Queckenstedt test. Raising the venous pressure by crying or coughing has the same effect.

Compression of the internal jugular vein is commonly not done effectively by nurses, and it causes considerable discomfort to the conscious patient. An efficacious alternative is to ask the patient to inspire and then forcibly expire against the closed glottis. In all cases in which I have used this method at lumbar puncture, and compared the effect with that of compression of the internal jugular vein, the rise and fall in cerebrospinal-fluid pressure has been identical. This method is not only more comfortable for the patient, but does not require the coöperation of an assistant.

Nelson, New Zealand. C. H. BELTON.

"BURNS" IN THE ABSENCE OF FIRE

SIR,—Last year Sir Harold Whittingham and his colleagues described the injuries in the Comet aircraft disasters.[1] In the Elba Comet disaster, changes with the appearance of burns were found in the skin but there was no singeing or burning of the clothes or hair. Several possible causes were discussed, and it was concluded that the most likely one was fire starting after the bodies had fallen into an area of sea covered by a kerosene film and that scalding occurred. Fryer has since declared that the skin changes "were found to be due to" this cause.[2] This touch of finality is perhaps not justified. In the original article it was stated that this type of "burning" was not familiar to forensic pathologists. It is worth recalling, therefore, the Senghenydd coal-mine explosion in South Wales in 1913 which was the worst disaster in British mining.

Of 458 men working in the western side of the mine, 440 were killed and 18 were rescued and survived. Some of the survivors showed areas of what appeared to be burning, but they came from a part of the mine where there had been no fire. In the Elba Comet disaster, 14 of the 15 bodies showed skin damage simulating burns, and in 13 the injury was on the back or buttocks. In the coal-mine disaster, of the 18 men rescued, skin lesions resembling burns were found in 9, and the buttocks likewise were the commonest sites; 5 were affected on the right side and 3 on the left, and in 1 the buttocks escaped. In several of the men there were also lesions over bony prominences, such as the ischium. The mine survivors were suffering from carbon-monoxide poisoning, and Davies [3] concluded that it was the main cause of

1. Armstrong, J. A., Fryer, D. I., Stewart, W. K., Whittingham, H. E. *Lancet*, 1955, i, 1135.
2. Fryer, D. I. See *J. clin. Path.* 1955, **8**, 348.
3. Davies, I. J. *Brit. med. J.* 1914, ii, 57.

the skin changes, and that local pressure from sitting or reclining was a contributory cause. In the Comet cases some of the affected areas were traversed by bands of apparently undamaged skin, suggesting that some local condition of the skin surface influenced the development of the lesions.

Other instances of burn-like lesions with carbon-monoxide poisoning have been recorded, and it may well be that other forms of anoxia could have similar effects. Perhaps some of the "burns" in babies with asphyxia are due to anoxia and not to hot-water bottles.

In writing this letter I do not wish to suggest that the Comet "burns" were caused in the same way as those in the mine but rather to draw attention to mysterious "burns" in circumstances where it is known that there has been no fire.

Institute of Pathology, Royal Infirmary, Cardiff. J. GOUGH.

Medicine and the Law

Death of Patient with Artificial Pneumothorax

A WOMAN, aged 46, with a long history of pulmonary tuberculosis died soon after an attempt to refill an artificial pneumothorax. No air-space had been found with short refill needles. A longer one was tried without success; and the operation was then abandoned. Soon afterwards the patient became unconscious, and she died about an hour later. Necropsy showed that the intrathoracic structures had been distorted by the long-continued pulmonary disease and that the aorta had been punctured by a needle. A verdict of death by misadventure was recorded.[1]

Osteopath Criticised at Inquest

The possibility of a verdict of manslaughter was mentioned at an inquest into the death of a young man following treatment by an osteopath.[2]

The dead man was Frank Marsden, a 24-year-old bank clerk, of Ossett, near Huddersfield. Marsden suffered from curvature of the spine and pains in the feet which he attributed to rheumatism, and he consulted Mr. Leonard Redfearn Carter, described as an osteopath and naturopath. After examining him, Carter gave a hopeful report and prescribed dietary treatment. Marsden had kept rigidly to these diets over a period of fifteen months to the day of his death.

Dr. W. L. Rose, who conducted a post-mortem examination, said that the cause of death was malnutrition due to inadequate food intake. "In my opinion," he said, "to keep this boy on these diets for a long period was absolutely criminal." Giving evidence, Carter said that he took up his present practice nearly thirty years ago after passing examinations. He was firmly of the opinion that the diets he had prescribed would cure the rheumatism, but he admitted that they supplied only 1500 calories a day.

The coroner told the jury that, if they thought that Carter had been so negligent as to cause death in a criminal way, that would be a question of manslaughter, but the evidence did not seem as strong as that. The jury returned a verdict of death by misadventure.

A Patient 30 Miles Away

Worcestershire Executive Council has decided that it was unreasonable for a Birmingham doctor to include in his list a patient living at Pershore,[3] on the ground that the doctor could not, from 30 miles away, fully comply with the terms of service. It was stated on behalf of the doctor that he expected the patient to return to Birmingham, where he had formerly lived, and that he had in fact treated the patient in Pershore. The chairman of the council is reported to have said: "We can't prove the doctor could not render service," but the council decided to advise the patient to attend a local doctor.

1. *Southend Standard*, Dec. 21, 1955.
2. *Yorkshire Post*, Jan. 2, 1956.
3. *Birmingham Post*, Dec. 29, 1955.

Obituary

WILLIAM GILCHRIST PATTERSON

M.D. Edin., F.R.C.P., D.P.H.

Dr. Patterson, who died on Jan. 5 at the age of 55, was the first senior administrative medical officer appointed under the National Health Service, and was often the spokesman for his colleagues. His previous work as medical officer of health for Surrey had given him unusual knowledge of the planning and management of hospitals, and in his eight years with the Newcastle Regional Hospital Board he won respect and admiration by an administrative ability based on intelligence, understanding, and courage.

He was the second of three brilliant sons of George Patterson, who in his later years was headmaster of Whitburn School in West Lothian, and much of his youth was spent in the Lothians countryside. At George Heriot's School in Edinburgh, where he was dux and played for the first fifteen, a distinguished future was forecast for him; and, after serving for a short time in a combatant regiment, he continued to win honours at Edinburgh University, including the Ettles scholarship for the best student of his year. He qualified in 1924 with first-class honours, held various house-appointments in general hospitals and mental hospitals, and then had a period in general practice before concentrating upon a career in public health.

Patterson's first public-health post was that of medical officer of health for the Chertsey combined district, and this was followed by appointment as M.O.H. for the county borough of Barnsley. From Barnsley he returned to Surrey as deputy to Dr. James Ferguson. This was the time when some of the major local authorities were going rapidly ahead with new hospital services, and Patterson, whose heart was in this from the first, took a big share in the Surrey schemes by which many hospitals were upgraded and a new one was built at St. Helier. The Surrey system differed from the neighbouring one in Middlesex in that it gave more scope for part-time consultants: though Patterson thought that hospitals gained by having a medical superintendent, who should be one of the senior clinicians, he held that, in appointing consultants, they should secure the best men they could get, and not limit the field by asking whole-time service. Under Ferguson's inspiration the Surrey policy was one that made a particular effort to preserve, in the municipal hospital, part of the pattern of the voluntary hospital, and association between these two kinds of hospital was closer in Surrey than it generally was elsewhere.

Owing to the war, and the additional strains it imposed on the county organisation, Ferguson's retirement was deferred and Patterson did not succeed him as M.O.H. till 1946, when the county was already about to lose its hospitals altogether. No doubt it was because of the closing of this chapter in hospital administration that he went in 1947 to Newcastle upon Tyne to help in opening another.

Newcastle was certainly fortunate in his being available and wishing to move to the North. The region was not an easy one to organise: some of the municipal hospital services had been developed exceedingly well, but bed provision and standards in many areas were lagging a long way behind. Long before the appointed day Patterson had made a detailed tour of all the hospitals in the board's area and had met most of the senior staffs. Once he had made his surveys he could see things remarkably clearly, and as a result the board's programme for development was skilfully and fairly laid down in accordance with his advice. If, through his strength and knowledge, he was a somewhat dominating personality, the relations between the board and its officers were as good as anywhere else in the country. Moreover, he soon made a name and created a respect for himself in the region among members of all the various health services. He was intensely interested alike in the general practitioners, in the consultants, and in the medical, nursing, and hospital staffs; and he never lost his sincere interest in the public-health service. Nothing pleased him more than when he, a senior

administrative medical officer of a regional hospital board, was elected president of the Northern branch of the Society of Medical Officers of Health in 1953.

In national and international spheres and on central advisory committees Patterson's advice was often sought. On any committee he was a tower of strength: he had always read the papers and formed his own view, which he put forward clearly and persuasively, often ending with a charming smile and a diffident question as to whether he had expressed accurately his colleagues' views. His contributions, none the less, could be outspoken, and he had no hesitation in joining the unpopular side when he thought it the right one. To the North-East region—which felt itself in some danger of being overlooked—it was a great satisfaction that its chief hospital officer should enter the lists so strongly for a reasonable allocation of central funds; and not without success, as was his wont.

Though to some he may have appeared a somewhat lonely figure, and others may have thought that his intense concentration on the matter in hand left little time at work for casual or "off record" conversation, Patterson had a "second personality" reserved for his home and family life. He was above all a family man, and those who were privileged to see him with his wife and children in their home saw happiness and a family unit at its best. He and his wife were friends from childhood, and she has five children—a married daughter, and two older and two younger sons.

He died suddenly when attending a hospital meeting in Sunderland. Some of his friends had noticed that he looked tired during the last few months, but there had been no diminution in the vigour of his mind; nor had he ceased to throw himself heart and soul into any task which confronted him. The personal notes which follow are taken from tributes received from associates.

* * *

Dr. Patterson had a strong and independent mind and was fearless in deviating from the "official" line, whether of the Ministry or of his own group, if he thought differently. His approach was logical and practical, he was a shrewd judge of human beings, and he sought means that he knew from experience worked. He made his contributions in debate in a quiet voice, with a smile upon his face and with a roving eye which twinkled as he saw approving glances on the other side of the table. On the rare occasions on which I have heard him on the platform he held his audience by logic, fairness of mind, and force of personality.

Since 1948 I have had a number of official "field days" with him in the territories of his board.

He would prepare a programme of visits and of topics to discuss. The visits were to sites for new hospitals, say for West Cumberland at Whitehaven or for the new town at Peterlee, or to existing hospitals where extensions were pending or where new buildings deserved study as at Carlisle or Durham or Shotley Bridge. However well prepared he was, and confident that his proposal was sound, he valued the criticism or opinion of any knowledgeable person; and he prudently sought by such means as this to gain informally the official viewpoint so as to avoid delay or foundering later of the schemes he was promoting for his board. The hospitals and sites were always inspected, but there was never enough time for the discussion of the many subjects of policy and practice within the National Health Service on which he offered reflections and sought those of others.

These days with Patterson were always a delight. His interest in all aspects of his "charge" was deep and lively; his judgments on people when not generous were just and restrained; he had an optimistic and forward-looking mind; his courtesy was unexceptionable, his humour of the Scottish sort, quiet and pawky. We should be thankful for the example of such a man.

C. T. M.

I had the privilege of seeing Dr. Patterson at close quarters over a sixteen-day period when we were both among the delegates sent by the United Kingdom Government to a course organised for *fonctionnaires* of the Brussels Treaty (now Western European Union) governments in France last summer.

We were both members of a group that studied the organisation of hospital services: we visited a number of French hospitals and enjoyed much generous French hospitality. I do not think that Dr. Patterson was altogether in his element under these conditions—I suspect that his good Scottish soul would have preferred something a little more austere in the eating and drinking for instance, and none of us British were at home with the language—but he rose above these difficulties splendidly, and I think the whole of our group conceived a very real affection, as well as admiration, for him before the course was over. I specially admired his dogged refusal to allow himself to be swept away by the rapid pace of the French *exposés* to which we listened, and by his frequent interventions, with forefinger uplifted and that little smile at the corner of the mouth, to clarify, in slow, simple French with a pronounced Scottish accent, some point which he felt had not been properly covered, or to explain how much better these things were ordered in the Newcastle region. At the very outset of the course he made his mark, at the session when each of us was called on to introduce himself—in French: "Mon nom est Patterson" he announced; "je suis écossais, mais je travaille depuis vingt ans (or was it more ?) dans le pays de mes ennemis." I should like to feel, as I am sure would the rest of the *stagiaires*, that we could all, national *ennemis* of the past and international colleagues of the present, claim his personal friendship.

A. R. W. B.

His appointment was the first act of the Newcastle Regional Hospital Board, and a most fortunate decision it proved. A Scot educated in Scotland, an administrator whose professional life had been lived in the South of England, he came as a stranger to the North-East. But so thorough was his method and so quick his apprehension that in a very short time he was so much at home with the region and the people in it that it was difficult to think of him as belonging anywhere else. He was admirably fitted, both by temperament and training, for the responsibilities of his office. He was never timid either in what he did or what he advised. On the contrary, he was bold and decisive and the event has proved his wisdom. Human, conscientious, and highly intelligent as he was, Patterson addressed himself to his duty with something of a fervour of dedication, with the result that, under his impulse, a great deal of reorganisation and expansion, particularly in the consultant services, was very rapidly achieved for a relatively small expenditure. But he was always insistent that only heavy capital expenditure could bring real relief and improvement to those parts of the hospital service most in need of them, and he chafed sorely, as others have done, under the severe financial restraints which prevented them. Happily, he served long enough to see the fruits of his early work and the commencement of some at least of the larger projects he had proposed.

Although he had made the deliberate choice, at an early stage, of a career in administration rather than in clinical medicine, the choice had clearly not been an easy one. As his academic record and professional distinction showed, he had high intellectual gifts; and to visit a hospital with him was to know that he had a real compassion for the sick. But he had chosen a remoter field and was resolved to make it beneficent. That he succeeded there could be no doubt. The inspiration of his work came from a compassionate heart and his skill in execution from an acute and cultivated mind tempered by long experience. One of his gifts was a remarkable memory stored both with the kind of information for which other people have to refer to their files, but which he could mobilise at a moment's notice, and with much else besides. In conversation with him it soon became clear that, at one time or another, he had read widely in general literature and remembered what he had read. In his professional field there was none better at presenting a case with clear and cogent reasoning supported by all the relevant facts, which he had immediately at command. This is not to say that he had no prejudices; he would have been more than human had that been so. But, once convinced, he discarded them in a disarming way. Although he knew how to delegate duties without loosing grip or authority over the field of action as a whole, he could never for long relax the pressure on himself. This was the forfeit he paid for enthusiasm. To his abilities, experience, and knowledge he added great charm of manner. These qualities of mind and heart made him not only a fine administrator, the

admirable chief officer that he was, but the well-loved friend of those whose fortune it was to work with and learn from him and who have now to mourn his untimely death.

E. F. C.

Cicero in *The Offices*, referring to public officials, wrote:

"But he who takes on him a public trust, should see that he himself be qualified for the management of it; in considering which there is a double extreme to be carefully avoided, that he neither despair through mean timidity, nor yet be over-confident through eagerness of desire; and lastly, in whatever he sets about, let all things be diligently and carefully put in order, before he goes on to the execution of it."

This reference to characteristics held to be desirable in a public official could not be illustrated by a finer example than the personality and work of William Patterson. All things were diligently and carefully put in order before he went on to the execution of his duty. As a result, his work will live for many years to come.

W. S. W.

ETHELBERT REST FLINT

M.B. Leeds, F.R.C.S.

Mr. E. R. Flint, emeritus professor of surgery in the University of Leeds, died at Leeds on Jan. 5, after a long illness.

Born in 1880 at Scarborough, and educated there, he received his medical training in the Leeds School of Medicine and qualified in 1905. After holding a house-appointment at the Norfolk and Norwich Hospital he returned to Leeds in 1907 as house-surgeon at the General Infirmary. He spent the next four years in general practice, an experience which he always regarded as of the greatest value. In 1911 he was appointed resident casualty officer at the General Infirmary and in 1912 resident surgical officer. The same year he took the F.R.C.S. On the outbreak of the 1914-18 war he was commissioned in the R.A.M.C., but in fact all his service was done in the Infirmary. Owing to the absence of the honorary surgeons on war service he shouldered a tremendous burden of work, and in two years he did 6140 operations on civilians and wounded soldiers. M. J. S. recalls that "for weeks on end Flint was never out of the hospital (except that he slept out—on the roof of the Infirmary porch, where he had a protective awning erected) or out of surgical attire by day. All or nearly all the house-surgeons of the war period were undergraduates, and the weight of responsibility which he bore would have crushed a lesser man. To him, it was but a stimulant to increased effort."

Photo Press (Leeds)

The war over, he presently resigned his joint office of surgical registrar and tutor to become private assistant to Sir Berkeley Moynihan. He held this post until 1926, but meanwhile, in 1922, he was elected an honorary assistant surgeon to the Infirmary, and, in 1933, full surgeon. He was also consulting surgeon to the Marguerite Hepton Orthopædic Hospital, Thorp Arch, to Batley and District General Hospital, to Malton Cottage Hospital, and to the General Hospital, Halifax. In 1940, after he had joined the consulting staff of the General Infirmary, he again undertook important surgical duties at the Clayton Hospital and Pinderfields Hospital, Wakefield. He was also a member of the Leeds and West Riding Medico-Chirurgical Society for over forty years, an original fellow of the Association of Surgeons of Great Britain and Ireland, a fellow of the Royal Society of Medicine, and a member of the Moynihan Chirurgical Club.

Flint was thus fully and usefully occupied in the clinical field, but he also did excellent work on the academic side. In 1922 he had been appointed clinical lecturer in surgery in the University of Leeds and for some years he was an honorary demonstrator in physiology. He also from time to time carried out research in other departments, including investigations into the ætiology of biliary-tract infections and a study of liver function in cholecystitis and cholelithiasis. He investigated the abnormalities of the right hepatic, cystic, and gastro-duodenal arteries and of the bile-ducts, and he published several papers with colleagues in the departments of pathology and bacteriology. He was Arris and Gale lecturer in the Royal College of Surgeons in 1923 and again in 1930, and a Hunterian professor in 1933. In 1934 he was appointed to the chair of clinical surgery at Leeds, which he gave up on his appointment to the chair of surgery two years later. In 1940 he was made emeritus professor.

Outside his professional work Flint was a distinguished athlete, and represented his county and the North of England at hockey for many years. As a good golfer he also enjoyed this game. He won the Moynihan golf cup in 1914 and again in 1919, and continued to play until he was over 70.

Of his work in the operating-theatre G. A. writes: "He will always be remembered as a general surgeon of outstanding brilliance and dexterity. Although most actively engaged in abdominal surgery, there was no field in which he was not proficient, possessing quite remarkable talent and instinct; always calm and unruffled, he could make up his mind quickly and act promptly. He possessed a tremendous capacity for work, as evidenced by his lengthy operating-lists which he carried out so expeditiously and without any apparent fuss. He was very modest, quiet, and reserved, but when he did engage in discussion he contributed something valuable and worth listening to. As a colleague no-one could have been more loyal. His services were continuously at the disposal of his colleagues and many have cause to be thankful to him."

M. O. also writes of Flint's remarkable dexterity which "seemed to make him almost independent of an assistant, and sometimes of an anæsthetist when he used spinal anæsthesia. During the 1914–18 war he had acquired an exceptional surgical experience and astounding technical ability, and his great experience, especially of abdominal surgery, enabled him to work much faster than most people. For instance he performed a partial gastrectomy usually in about 40 minutes. He was a kindly man, not given to saying unnecessary words, and was always rather shy of the limelight. He was gentle and quiet with his patients and helpful to his assistants. He will be remembered throughout Yorkshire for his kindness, his hard work and great surgical skill."

"As a medical colleague," writes, C. W. V., "I treasure the memory of the quickness and dexterity with which he carried out the operation for infant pyloric stenosis—a relatively insignificant operation when put against the background of major surgery. His disposition was inclined to be shy and reserved, but behind this attitude he was gentle, kindly, and friendly and one who was never hurried or ruffled under the stress of work. Our feelings of sorrow, pity, and loss are the more poignant because the last years of his long and arduous life in the service of others were clouded by disability which denied him the enjoyment of a happy and restful retirement which no man could have more deserved."

In 1918, Professor Flint married Miss Alicia Bay Farrer, who survives him with three sons.

JOHN PUNNETT PETERS

M.D. Columbia

Dr. Peters, who died on Dec. 29 at the age of 69, had been John Slade Ely professor of medicine at Yale University since 1927. He will be remembered, as a scientist, for his pioneer work on the application of chemical observations to clinical medicine; as a doctor, for his concern that medical care should be accessible to the whole community; and, as a citizen, for his

successful stand against his illegal dismissal from a government post.

He graduated from Yale in 1908 and took his M.D. at Columbia College of Physicians and Surgeons in 1913. While holding an appointment at the Presbyterian Hospital in New York he served as instructor in clinical medicine at the college. In 1917, with a research fellowship, he moved to the Russell Sage Institute of Pathology. In 1921 he went to Yale as an associate professor of medicine, and he was elected to his chair in 1927.

As the senior professor of medicine at Yale he took an important part in the movement for development of the public-health services, and he was a consultant to the United States Public Health Service on Federal grants for medical research. Another of his advisory appointments was that of consultant to the Surgeon-General of the United States Army. It was against his dismissal from this appointment on grounds of disloyalty that he successfully appealed in the Supreme Court last June.

Of his scientific work one of his English colleagues writes:

In his preface to the first, and alas only, volume of the second edition of what is known formally as *Quantitative Clinical Chemistry*, but familiarly as *Peters and Van Slyke*, Dr. Peters remarked "When the task of writing the book was first undertaken, clinical chemistry was adolescent." The book was published in 1931, and ever since has been the standard reference in its subject. In the progress of clinical chemistry from adolescence to maturity, no-one has contributed more than Peters himself, and in the year of his death further notable contributions appeared from him and from his school. He was perhaps specially concerned with water and electrolyte metabolism; his book on *Body Water* (1935) is a classic, and he has since reviewed this explosively expanding subject in *Physiological Reviews* and in successive editions of *Duncan's Diseases of Metabolism*. Even before 1920 he and his group had published many important original papers on œdema, renal disease, and lipide metabolism. His was perhaps specially notable for the equal stress which he laid on the clinical and chemical work in his unit; his young men were trained both to look after their patients and to carry out their own chemical estimations, and neither duty could be scamped or delegated. Even when official duties and advisory work claimed much of his time, they could not submerge his originality.

Mr. Percy G. Phelps, of the firm of Down Bros. and Mayer & Phelps, surgical instrument manufacturers, died on Jan. 2 at the age of 80. He retired from the firm in 1952.

Appointments

AINLEY, N. J., M.D. Belf., M.R.C.P.I.: asst. pathologist, Bradford area.

CLARK, A. N. G., M.D. Leeds: asst. geriatrician, Leeds A and B groups.

CONNOLLY, MARGARET R., L.R.C.P.E., F.F.A.R.C.S., D.A.: part-time consultant anæsthetist under Liverpool R.H.B.

KEARNEY, J. M., M.B. Belf.: asst. M.O., British Transport Commission, London Midland Region.

LEE, W. R., M.B. Lond., D.OBST.: asst. M.O., British Transport Commission, London Midland Region.

LINDSAY, G. G., M.B. Glasg., D.P.H.: depute M.O.H. and port M.O., Greenock.

PATTERSON, J. L., M.B. Glasg., D.P.H.: deputy M.O.H. and principal school M.O., Lincoln C.B.

STRACH, E. H., M.D. Prague, M.CH.ORTH. Lpool, F.R.C.S.: part-time consultant orthopædic surgeon, St. Helens area.

VULLIAMY, D. G., M.D. Camb., M.R.C.P., D.C.H.: consultant pædiatrician, W. Dorset and S. Somerset hospitals.

South-Western Regional Hospital Board:

CIANTAR, JOAN, M.B. Wales: registrar in pathology, Bath group of hospitals.

MANTLE, J. A., M.B. Birm., F.R.C.S.: consultant orthopædic surgeon, W. Cornwall clinical area.

PIGGOT, JAMES, M.B. Bel., F.R.C.S.E.: registrar, Princess Elizabeth Orthopædic Hospital, Exeter.

WARNER, JAMES, M.B. Birm.: registrar in psychiatry, Bristol mental hospitals.

London County Council:

LOWRY, AUDREY M., M.R.C.S., D.C.H.: M.O.

MAGNER, VALERIE C., M.B. N.U.I., D.C.H.: M.O.

ROBINSON, SHEILA M., M.B. Camb.: M.O.

VAKIL, MARY A. O., M.B. Belf.: M.O.

Notes and News

TEACHING HOSPITAL IN THE WEST INDIES

THE Secretary of State for the Colonies has appointed a committee with the following terms of reference:

"To inquire into the financial needs and methods of financing of the University College of the West Indies Teaching Hospital; to make proposals for its essential capital and recurrent requirements in relation to the financial resources available; and to assess the proportion of the cost arising from the teaching functions of the hospital."

The chairman of the committee is Dr. R. S. Aitken, vice-chancellor of the University of Birmingham; and the other members are Dr. E. R. Boland, dean of Guy's Hospital Medical School, Dr. J. W. P. Harkness, medical adviser, Development and Welfare Organisation, West Indies, and Mr. G. A. Phalp, secretary of the United Birmingham Hospitals' Board.

WELLCOME TRUST

GRANTS made lately by the Wellcome trustees include £25,000 to the Medical Research Council towards the cost of an investigation of trachoma to be carried out in Jordan and London under Sir Stewart Duke-Elder. The trustees have also allocated up to £33,000 for the purchase of three electron microscopes for indefinite loan to the Medical Research Council (for use initially in the department of biophysics at University College, London), to the physiological laboratory, University of Cambridge, and to the department of human anatomy, University of Oxford.

PROGNOSIS IN ESSENTIAL HYPERTENSION

THE prognosis when essential hypertension is discovered in patients under 46 has been studied by Storm Mathisen in the University Clinic, Oslo.[1] Hypertension (defined as a systolic blood-pressure of 160 mm. Hg or more, and a diastolic blood-pressure of 95 mm. Hg or more) was found for the first time in 290 patients (111 men and 179 women) who were in hospital with other illnesses; the mean age of the men was 37 and of the women 38. When these patients were recalled for examination ten years later (in 1950–51) 46 men (42%) and 52 women (29%) had died, the great majority from their hypertension. Their average survival after the discovery of their hypertension was five years. It was noteworthy, however, that the 97 cases in which the diastolic pressure sometimes fell below 95 mm. Hg had a mortality of 8%, which compares very favourably with the 43% mortality of those whose diastolic pressure was not observed to fall below that level. For the whole group of 290 patients, the death-rate in men was more than eleven times, and in women more than seven times, greater than for the general population; but the death-rate for patients with a diastolic pressure which sometimes fell below 95 was of the same order as for the general population.

Among the causes of death coronary thrombosis was uncommon; and though Storm Mathisen admits that this may be explained partly by the patients being young, he thinks that there would have been more such deaths if, in fact essential hypertension predisposes to coronary thrombosis.

JOURNAL OF ANALYTICAL PSYCHOLOGY

THE first issue of this journal,[2] published on behalf of the Society of Analytical Psychology in London, is dedicated to Prof. C. G. Jung and forms part of a specially bound volume presented to him by the society on the occasion of his 80th birthday. A preface by Dr. Michael Fordham, the editor, explains that the journal has been launched in order to afford an outlet for work by the growing body of analytical psychologists in this country, and not only to increase the influence of analytical psychology. The editor is assisted by four distinguished British analysts and has secured the collaboration abroad of several eminent analytical psychologists. The quality of this first issue augurs well for the journal's future development.

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1. Prognosen ved Essensiell Hypertensjon. By HAAKON STORM MATHISEN. Oslo. 1954. Pp. 124.
2. Published by Tavistock Publications Ltd., 2, Beaumont Street, London, W.1, to which orders and inquiries should be addressed. Subscriptions: 21*s.* per volume (at present two issues), 12*s.* 6*d.* per issue.

Queen's University, Belfast

At recent examinations the following were successful:

M.D.—R. L. Turner (with commendation).
Ph.D.—R. W. M. Strain.
M.B., B.Ch., B.A.O.—J. S. Armstrong, J. F. Caskey, G. R. Cocks, John Colville, John Cooper, J. C. Cronhelm, B. S. Douglas, J. A. Gilmore, J. E. Glassberg, H. D. Hall, Lilian M. Hamilton, Lorna K. Hogg, Irene C. Hooks, Crawford Hull, D. A. C. Johnston, Sarah D. Killough, H. C. S. Leitch, J. H. McCauley, L. C. McKenna, W. R. McKibben, Anne T. Mathews, J. K. Millar, Christabelle R. Mutthumani, W. M. Pillow, K. B. Sloan, W. F. Speers, A. W. Wilkie, M. J. Wright.
D.P.H.—John Tohill.

University of Cape Town

Dr. L. H. Wells, reader in physical anthropology in the University of Edinburgh has been appointed to the chair of anatomy.

Order of St. John of Jerusalem

The Queen has sanctioned the following promotions in, and appointments to, this Order.

As Knights.—Colonel G. G. L. Stening, F.R.C.S., E. M. Humphery, M.B.
As Commanders.—E. Parry, M.B.E., F.R.C.S., Lieut.-Colonel C. G. F. Morrice, F.R.C.S., Sir Harry Sinderson, K.B.E., C.M.G., M.V.O., M.D., D. H. Kinmont, M.B., Cecil Heygate-Vernon, F.R.C.S.E., R. S. Steel, O.B.E., M.R.C.P., A. L. Dawkins, O.B.E., F.R.C.S., H. W. Ward, M.B., D. D. McCowan, M.B., Air Commodore T. K. Lyle, C.B.E., F.R.C.S., Lady Wakeley, M.B.
As Officers.—J. G. Mackereth, M.B., Hector Munro, F.R.C.S.E., C. M. Willmott, M.R.C.S., Harold Fallows, M.B., R. J. Maule Horne, M.B., K. A. Boughton-Thomas, M.B., W. C. Lyons, M.B., Major T. M. Wilks, O.B.E., T.D., M.R.C.S., G. M. S. Smith, M.B., H. S. Brown, M.D., D. J. Martin, F.R.C.S., C. B. Ball, M.B.E., L.M.S.S.A., W. E. George, M.B., I. O. Thorburn, M.D., D. W. Montgomery, F.R.C.S.I., Lieut. Colonel George Gregg, O.B.E., F.R.C.P.I., Laura K. Maule Horne, M.B., Clara Stewart, M.B.

St. George's Hospital, London

Postgraduate demonstrations in neurology and psychiatry are being held at the medical school at 5 P.M. on Thursdays from Jan. 12 to March 15. They are open to doctors without fee.

Social Medicine Research Unit

The Social Medicine Research Unit of the Medical Research Council has been transferred to the London Hospital. Letters should be addressed to the unit at the London Hospital Research Laboratories, Ashfield Street, London, E.1. Tel.: Stepney Green 5257.

Royal Northern Hospital Centenary

On June 26 the Duke of Gloucester is to preside at a dinner for past and present members of the consultant and resident staff of this hospital and their wives. The dinner will be held at the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2. Those who hope to attend should write to the hon. secretary, Staff Dinner, Royal Northern Hospital, Holloway Road, London, N.7, as soon as possible.

British Society for Research on Ageing

On Friday, Jan. 20, at 2.30 P.M., a meeting on connective tissue and its changes with age will be held at the General Infirmary, Leeds. Further particulars may be had from Mr. G. H. Bourne, D.SC., hon. secretary of the society, London Hospital Medical College, E.1.

Runwell Hospital, Essex

The sum of £10,000 has been granted by the Peel Trust, under the ægis of the Mental Health Research Fund, to Runwell Hospital for research on the incidence of temporal-lobe epilepsy in epileptic colonies and mental-deficiency institutions. The work is to be carried out under the direction of Dr. D. W. Liddell with the help of a full-time research fellow. A new electro-encephalograph is being supplied by the Fund.

Dr. G. D. Fraser Steele has been appointed whole-time consultant psychiatrist to the hospital, Dr. J. H. Margerison whole-time research assistant in the senior-registrar grade (Peel Trust), and Dr. J. E. Boulding whole-time clinical research fellow.

The booklet on the Allocation of Pension under the National Health Service Superannuation Scheme has been revised to accord with the National Health Service (Superannuation) Regulations 1955 (H.M. Stationery Office. Pp. 25. 1*s.*).

Diary of the Week

JAN. 15 TO 21

Monday, 16th

HUNTERIAN SOCIETY
8.30 P.M. (Mansion House, E.C.) Dr. J. J. Nuboer (Utrecht): Lung Resection in the Treatment of Pulmonary Tuberculosis.

Tuesday, 17th

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.1
5 P.M. Dr. J. R. Ellis: Changes in Medical Education. (First of two Goulstonian lectures.)
UNIVERSITY OF LONDON
5.30 P.M. (King's College, Strand, W.C.2.) Prof. B. Folkow (Gothenburg): Quantitative Aspects of Some Mechanical, Nervous, and Humoral Factors Controlling the Cardiovascular System. (First of two lectures.)
ROYAL ARMY MEDICAL COLLEGE, Millbank, S.W.1
5 P.M. Prof. George Macdonald: Recent Developments in Malaria Elimination and Control.
ST. MARY'S HOSPITAL MEDICAL SCHOOL, Paddington, W.2
5 P.M. Dr. Leslie Williams: Thrombophlebitis.
INSTITUTE OF DERMATOLOGY, Lisle Street, W.C.2
5.30 P.M. Dr. Brian Russell: Lupus Erythematosus.
SOUTH WEST LONDON MEDICAL SOCIETY
8.30 P.M. (Bolingbroke Hospital.) Sir Charles Dodds, F.R.S.: Modern Endocrinology and the General Practitioner.
UNIVERSITY OF LIVERPOOL
5.15 P.M. (Medical School.) Sir Geoffrey Keynes: Myasthenia Gravis and the Thymus Gland.
UNIVERSITY OF EDINBURGH
5 P.M. (University New Buildings, Teviot Place.) Dr. H. J. Deuel (University of Southern California): Fat as an Essential Component of the Diet. (Macarthur lecture.)

Wednesday, 18th

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1
8.15 P.M. *General Practice.* Dr. L. Dulake, Dr. Stanley Rivlin: Ulceration and Varicose Veins.
INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Dr. J. Smart: Chronic Bronchitis.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. J. O. Oliver: Pathology of Lupus Erythematosus.
EUGENICS SOCIETY
5.30 P.M. (Royal Society, Burlington House, Piccadilly, W.1.) Dr. Elizabeth Tylden, Dr. Mildred Creak, Mr. S. G. Singleton: Personality Characteristics of Parents of Promising Children.
HYPNOTHERAPY GROUP
8 P.M. (1, Wimpole Street, W.1.) Dr. George Newbold: Recent Experiments in the Hypnotic State.
ROYAL FACULTY OF PHYSICIANS AND SURGEONS, 242, St. Vincent Street, Glasgow, C.2
5 P.M. Dr. Alexander Brown: Hæmolytic Anæmias.

Thursday, 19th

BRITISH INSTITUTE OF RADIOLOGY, 32, Welbeck Street, W.1
8 P.M. Dr. J. B. Fawcitt, Dr. H. E. Parry: A Review of the Radiological Changes in the Chests of Children with Whooping-cough and Measles.
ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.2
5 P.M. Mr. J. H. Peacock: Raynaud's Disease, Raynaud's Phenomenon, and Acrocyanosis in the Upper Limb.
ROYAL COLLEGE OF PHYSICIANS
5 P.M. Dr. Ellis: Changes in Medical Education. (Second of two Goulstonian lectures.)
ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Manson House, 26, Portland Place, W.1
7.30 P.M. Prof. A. W. Woodruff, Dr. A. R. D. Adams: Treatment of Human Amœbiasis.
WEST LONDON MEDICO-CHIRURGICAL SOCIETY
7.45 P.M. (White Lion Hotel, Putney.) Dr. Roger Bannister: Physiology of Muscular Effort.
UNIVERSITY OF LIVERPOOL
5 P.M. Sir James Paterson Ross: The Craft of Surgery. (William Mitchell Banks lecture.)

Friday, 20th

ROYAL SOCIETY OF MEDICINE
5 P.M. *Epidemiology and Preventive Medicine.* Dr. A. L. Cochrane: Field Surveys of Chronic Disease in South Wales.
8.15 P.M. *Radiology.* Mr. H. H. G. Eastcott, Dr. David Sutton, Prof. Charles Rob: Diseases of the Major Arteries.
FACULTY OF RADIOLOGISTS, 45, Lincoln's Inn Fields, W.C.2
5 P.M. *Radiodiagnosis.* Dr. P. H. Whitaker: Pneumoconiosis in Tin-workers. Prof. Jethro Gough: Pathology of Tin-workers' Lung.
INSTITUTE OF DERMATOLOGY
5.30 P.M. Dr. S. C. Gold: Lupus Erythematosus.

Sir Horace Evans has been appointed medical consultant to the London Transport Executive in succession to the late Lord Horder.

On his retirement from the post of principal medical officer to Bristol City Council, Prof. R. H. Parry has been appointed visiting professor in public health to Yale University for six months.

A digest of statistics of pneumoconiosis in the mining and quarrying industries in 1954 has been published by the Ministry of Fuel and Power (H.M. Stationery Office. Pp. 27. 2*s.* 6*d.*).

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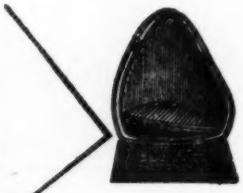

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Iron (*Ferr. Sulph. Exsic. equiv.*)	12 Milligrams
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REFERENCES:

1. J. Nutrit. 1942, **23**, 131.
2. Proc. Soc. Exp. Biol. Med. 1941, **48**, 459.
3. Ibid. 1939, **42**, 368.
4. "The Vitamins in Medicine", 1953 (3rd Edition) p.698.
5. Biochem. J. 1939, **33**, 1,402.
6. Orient. J. Dis. Inf. 1935, **16**, 37.

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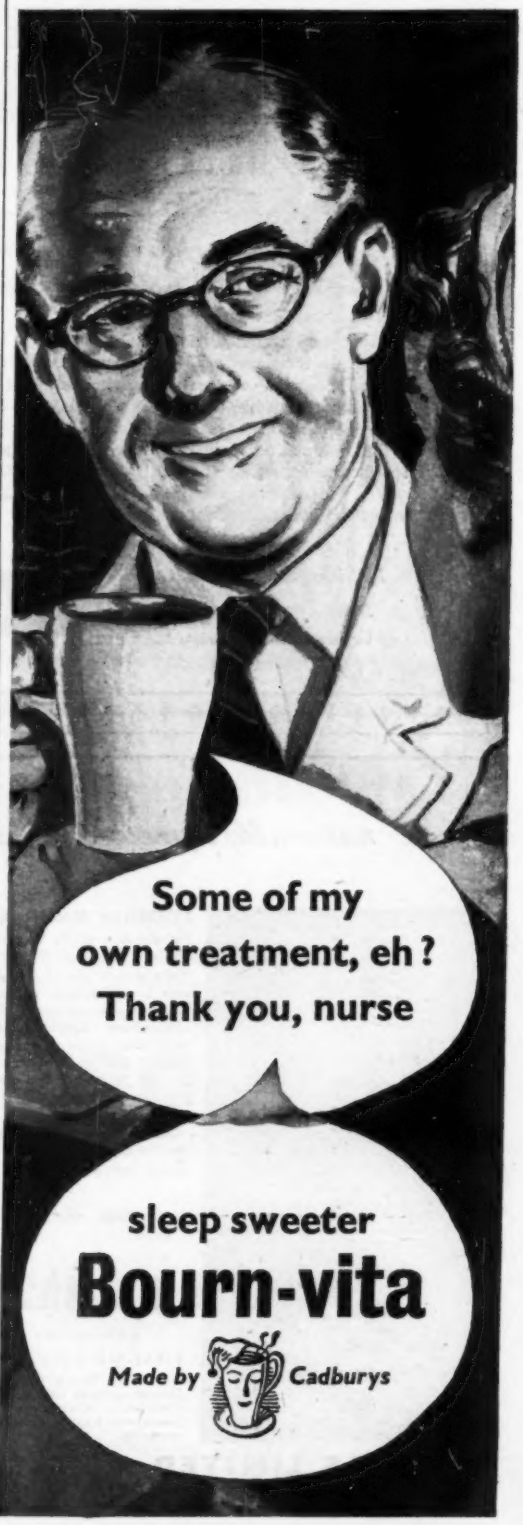

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies but candidates may normally visit the hospital by appointment.

Academic and Educational

ROYAL COLLEGE OF SURGEONS OF ENGLAND

COURT OF EXAMINERS

Notice is hereby given that the Council, on 8TH MARCH, 1956, will elect 2 Members of the Court of Examiners. Of the Examiners retiring in rotation, Mr. N. C. Lake and Mr. R. S. Corbett do not seek re-election.

Fellows of the College desirous of becoming candidates for the Office must make application, in writing, to the Secretary on or before 1st February, 1956.

KENNEDY CASSELS, Secretary.

Lincoln's Inn-fields, London, W.C.2.

UNIVERSITY OF LONDON

POSTGRADUATE AWARDS FOR MEDICAL AND SCIENTIFIC RESEARCH

Applications are invited from graduates of the University of London for the following awards for full-time research :—

HAZEL CLIFFORD POSTGRADUATE STUDENTSHIP. Value £550 p.a. for 1 year, renewable for a second year, for postgraduate research in medicine or on a scientific topic concerned with the advancement of medical knowledge.

WILLIAMS FELLOWSHIP FOR MEDICAL AND SCIENTIFIC RESEARCH. Value £1500 a year for 2 academic sessions, for original research into the cause and cure of diseases and illnesses attacking or affecting human beings.

Forms and further particulars from the Secretary to the Scholarships Committee, Senate House, London, W.C.1, to whom applications must be returned not later than 15th February, 1956.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY

(UNIVERSITY OF LONDON)

330/332, Gray's Inn-road, London, W.C.1

ADVANCED REVISION COURSE for Final F.R.C.S. students ; 6TH FEBRUARY–21ST APRIL, 1956. Arranged as part-time course (mostly evenings) to meet circumstances of students holding appointments. Fee £21.

BASIC SCIENCES CLASS (whole-time) for Part I D.L.O. students, with facilities for dissection ; 27TH FEBRUARY–26TH MAY, 1956. Fee £21.

WEEK-END COURSE IN PATHOLOGY of the ear, nose, and throat (intended for practising Pathologists and Oto-rhinolaryngologists and for senior trainees) ; 24TH and 25TH FEBRUARY, 1956, and 18TH and 19TH MAY, 1956. Fee £3 3s.

COURSE FOR MEDICAL OFFICERS OF HEALTH (especially those concerned with Maternal and Child Welfare) and School Medical Officers on the deaf child—early diagnosis ; care and training ; parent education, on 7TH, 8TH, and 9TH MARCH, 1956. Fee £4 4s.

Detailed syllabus obtainable from the Dean.

UNIVERSITY OF ABERDEEN

SENIOR RESEARCH FELLOWSHIP IN THE DEPARTMENT OF CHILD HEALTH

Applications are invited from Clinical Psychologists for a post as Senior Research Fellow in the Department of Child Health. The research project will take at least 3 years. Candidates should hold an Honours degree in Psychology ; and experience in children's work would be an asset. The salary range would be £700–£900, according to qualifications and experience, and the Fellow may be a member of the F.S.S.U.

Applications (4 copies), and the names of 2 referees, should be sent, not later than 31st January, 1956, to the Secretary, The University, Aberdeen, from whom further information may be obtained.

BRITISH POSTGRADUATE MEDICAL FEDERATION AND EMPIRE RHEUMATISM COUNCIL

CONFERENCE FOR CONSULTANTS ON MODERN ASPECTS OF RHEUMATIC DISEASE will be held at The Middlesex Hospital, Mortimer-street, London, W.1, and The Postgraduate Medical School, London, W.12—22ND–24TH MARCH, 1956.

The programme will include lectures, demonstrations, films and discussions on Modern Methods of investigation and treatment.

The Course will be limited to 30 persons. No fees. Closing date for application 1st February, 1956.

Application for places and detailed programme from the General Secretary, Empire Rheumatism Council, Tavistock House (N), Tavistock-square, W.C.1.

THE NUFFIELD FOUNDATION

FELLOWSHIPS AND SCHOLARSHIPS IN DENTISTRY

The Nuffield Foundation invites applications, from citizens of the United Kingdom, for Fellowships and Scholarships in Dentistry. To help the advancement of teaching and research on dental health and disease, the Foundation is prepared to award a number of Fellowships :—

(I) to enable selected men and women with dental qualifications to receive such additional training in pure and applied science as is desirable to fit them for an academic career in dentistry (but not to obtain a medical qualification), and ;

(II) to enable selected university graduates in medicine and science to receive training that will qualify them to undertake teaching and fundamental research on dental health and disease.

The Foundation is also prepared to award a limited number of Scholarships to assist students of outstanding ability attending a university dental school to devote 1 or 2 years to further studies of the basic sciences.

Applications for Fellowships should be received by 1st March annually and for Scholarships by 30th June annually. Copies of the conditions of both Fellowships and Scholarships and the application forms are obtainable from the Director, The Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1.

L. FARRER-BROWN, Director of the Nuffield Foundation.

THE NUFFIELD FOUNDATION

MEDICAL FELLOWSHIPS

As part of its programme for the advancement of health, the Nuffield Foundation is prepared to award a number of Fellowships to highly qualified Men and Women of the United Kingdom, usually between the ages of 25 and 35, who wish to train further for teaching and research appointments in any branch of medicine.

Applications for awards in 1956 must be received not later than 1st May, 1956. The conditions of these Fellowships and the application forms are obtainable from the Director, The Nuffield Foundation, Nuffield Lodge, Regent's Park, London, N.W.1.

L. FARRER-BROWN, Director of the Nuffield Foundation.

INSTITUTE OF OBSTETRICS AND GYNÆCOLOGY

A REFRESHER COURSE

suitable for general practitioners will be held from MONDAY, 27TH FEBRUARY, to SATURDAY, 3RD MARCH, 1956, with attendance at Queen Charlotte's Hospital, Chelsea Hospital for Women, and the Department of Obstetrics and Gynæcology at Hammersmith Hospital. The fee for the course is £5 5s. Limited hostel accommodation is available.

Apply Secretary, Institute of Obstetrics and Gynæcology, Chelsea Hospital for Women, Dovehouse-street, S.W.3.

UNIVERSITY OF BRISTOL

DISSECTION FACILITIES DURING THE LONG VACATION

During JULY, 1956, the Anatomy Department is prepared to offer dissection facilities to a limited number of medical and dental students, from other Universities, who have already begun to dissect.

Full particulars may be obtained from the Registrar, The University, Bristol, 8. Applications should be sent not later than 31st March.

L.M.S.S.A.

FINAL EXAMINATION : SURGERY, 13th February, 12th March, 9th April, 1956. MEDICINE, PATHOLOGY, 20th February, 19th March, 16th April, 1956. MIDWIFERY, 21st February, 20th March, 17th April, 1956. MASTERY of MIDWIFERY, May and November. DIPLOMA IN INDUSTRIAL HEALTH, July and December.

For regulations apply REGISTRAR, Apothecaries Hall, Black Friars-lane, London, E.C.4.

MENTAL HEALTH RESEARCH FUND. Applications are invited for 1 or more LEVERHULME RESEARCH FELLOWSHIPS from suitably qualified persons wishing to pursue full-time research work bearing on problems of mental health, whether in clinical psychiatry or in 1 of its supporting sciences. Applicants may apply for either a Junior Fellowship, in the range £700–£1200 p.a. (including superannuation), or a Senior Fellowship, in the range £1300–£2000 p.a. (including superannuation). The appointments are for 2–3 years in the first instance, renewable for a maximum of 1 year thereafter.

Further information from the Secretary, Mental Health Research Fund, 39, Queen Anne-street, London, W.1.

UNIVERSITY OF DURHAM. Applications are invited for the CHAIR OF DENTAL PROSTHETICS, tenable at the Dental School, King's College, Newcastle upon Tyne, which will become vacant on 1st October, 1956. The Professor will hold an Honorary contract with the Board of Governors of the United Newcastle upon Tyne Hospitals.

Further particulars may be obtained from the undersigned with whom 15 copies of application should be lodged not later than 5th March. E. M. BETTENSON, Registrar.

University Office, 46, North-bailey, Durham.

THE UNIVERSITY OF LIVERPOOL. Applications are invited from medically qualified and non-medically qualified candidates for the post of ASSISTANT LECTURER IN HISTOLOGY in the Department of Physiology and Histology. The initial salary will be £700 p.a. for a medically qualified candidate ; or £550 p.a., or in special circumstances £600 p.a., for a non-medically qualified candidate.

Applications, stating age, academic qualifications and experience, together with the names of 3 referees, should be received not later than 6th February, 1956, by the undersigned, from whom further particulars of the conditions of appointment may be obtained. STANLEY DUMBELL, Registrar.

AUCKLAND UNIVERSITY COLLEGE. (University of NEW ZEALAND.) POSTGRADUATE SCHOOL OF OBSTETRICS AND GYNÆCOLOGY. The University College Council invites applications from Medical Practitioners for the position of ASSISTANT to the Professor of Obstetrics and Gynæcology, National Women's Hospitals, Auckland, New Zealand, with the status of a Senior Lecturer of the University of New Zealand. Applicants should have higher qualifications in obstetrics and gynæcology and have been qualified for not less than 10 years and have had not less than 5 years practical experience in the specialty. The appointment is a full-time appointment for a period of 2 years from the date of taking up duties. It is thereafter renewable, at the discretion of the Council in consultation with the Auckland Hospital Board, for a further 2 years ; the person appointed will be expected to take up his duties as soon as can be arranged. The salary will be that payable to a Senior Specialist, i.e., £1690, rising to £1940 p.a., plus an additional payment of £81 7s. recently authorised by Court Order. The commencing rate within this scale will be fixed according to qualifications and experience. The scale provides for 2 annual increments of £100 and a final increment of £50. A charge (at present £110 p.a.) will be made for the rent of a small unfurnished flat. An allowance is made towards travelling expenses.

Further particulars and information as to the method of application should be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The closing date for the receipt of applications is 15th February, 1956.

THE UNIVERSITY OF LEEDS. Applications are invited for IMPERIAL CHEMICAL INDUSTRIES LIMITED RESEARCH FELLOWSHIPS in Bacteriology, Biochemistry, Biomolecular Structure, Botany (Plant Biochemistry and Biophysics), Chemical Engineering, Chemistry, Chemistry of Leather Manufacture, Chemotherapy, Colour Chemistry and Dyeing, Engineering (Civil, Electrical or Mechanical), Fuel and Refractories, Geology (including Geochemistry), Metallurgy, Mining (Selective Flotation and Geophysical Surveying), Pharmacology, Physics, Physiology or Textile Industries (Chemistry of High Polymers (keratin and man-made fibres), Textile Technology and Wool Textile Engineering). The Fellowships will be of an annual value within the range £600–£900 a year according to qualifications and experience and will normally be tenable for 3 years. Further particulars can be obtained on request.

Applications (3 copies) (1 in the case of applicants from overseas), together with the names of 2 referees, should reach the Registrar, The University, Leeds, 2, not later than 14th April, 1956.

UNIVERSITY OF CAPE TOWN. Applications are invited for the post of SENIOR LECTURER IN PHYSIOLOGY. The successful candidate will take part in the teaching of medical and science students and will be in charge of either the experimental or the histological laboratory. A medical qualification is desirable. The salary scale is £1200–£50–£1450 p.a. plus a temporary cost-of-living allowance for a married man (at present £234 p.a.). A higher initial salary may be given on the grounds of qualifications and experience.

Applications (with copies of testimonials) should state age, qualifications, experience, publications and research interests, and should give the names of 2 referees whom the University may consult. 2 copies of the application should reach the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1 (from whom a memorandum giving the general conditions of appointment should be obtained), not later than 16th February, 1956. An additional copy should be sent direct by air-mail to the Registrar, University of Cape Town, Private Bag, Rondebosch, Cape Town, South Africa, by the same date.

The University reserves the right to recommend the appointment of a person other than 1 of the applicants or to recommend no appointment.

AUSTRALIA. UNIVERSITY OF MELBOURNE. SURGICAL PROFESSORIAL UNIT. Applications are invited for the posts of FIRST ASSISTANT and SECOND ASSISTANT in the above Unit. The appointments will be full-time and will involve the care of patients, teaching, and research.

Salaries, depending on experience :—

First Assistant : £A2500–£A3000 p.a.
Second Assistant : £A2000–£A2500 p.a.

Superannuation is similar to F.S.S.U.

The appointments will be for 2 years in the first instance and will be renewable. The positions are now vacant, but suitable starting dates will be arranged with the successful applicants. Applicants must hold a postgraduate degree or Diploma in Surgery.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The closing date for the receipt of applications is 29th February, 1956.

AUSTRALIA. UNIVERSITY OF MELBOURNE. MEDICAL PROFESSORIAL UNIT. Applications are invited for the post of FIRST ASSISTANT in the above Unit. The appointment will be full-time and will involve the care of patients, teaching, and research. Salary £A2500–£A3000 p.a., depending on experience, and subject to superannuation similar to F.S.S.U. The appointment will be for 2 years in the first instance and will be renewable. The position is now vacant, but a suitable starting date will be arranged with the successful applicant. Applicants must hold a postgraduate degree or Diploma in General Medicine.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The closing date for the receipt of applications is 29th February, 1956.

THE RESEARCH INSTITUTE OF THE HOSPITAL FOR SICK CHILDREN, TORONTO 2, CANADA. ASSISTANT VIROLOGIST. Applications now being considered from medical graduates (Male or Female) with some training in laboratory methods, and an interest in pædiatrics. Duties comprise research into ætiology and laboratory diagnosis of virus diseases of children with special reference to "poliomyelitis"; tissue culture techniques are mainly employed. Work will be carried out in the Virus Research Department, under direction of the undersigned. Vacant October, 1956, at starting salary of $5500, non-resident. Preference for person prepared to stay for indefinite period; otherwise, 2-year tenure essential.

Applications, mentioning referees, to be submitted (air-mail) to Dr. A. J. RHODES, Director, The Research Institute, The Hospital for Sick Children, Toronto, Canada.

THE RESEARCH INSTITUTE OF THE HOSPITAL FOR SICK CHILDREN, TORONTO 2, CANADA. RESEARCH FELLOWSHIP IN PÆDIATRIC NEUROLOGY. Applications invited from medical graduates (Male or Female) with some training in pædiatrics or neurology. Duties will consist chiefly of original investigation of convulsive disorders in young children by clinical and laboratory methods, under the direction of Dr. J. S. Prichard. Post vacant 1st August, 1956. Salary $5000. Preference given to applicant prepared to work for a 2-year period.

Applications, with names and addresses of 2 referees, to be submitted to Dr. A. J. RHODES, Director, The Research Institute, The Hospital for Sick Children, 555, University-avenue, Toronto, Canada, from whom further details can be obtained.

THE UNIVERSITY OF SHEFFIELD. Applications are invited for a post of LECTURER or ASSISTANT LECTURER IN BIOCHEMISTRY to begin duties as soon as possible. Salary scales : (*a*) for candidates holding a registered medical qualification—Lecturer, £800–£100–£1700 ; Assistant Lecturer, £700–£50–£800 ; (*b*) for other candidates—Lecturer, £650–£50–£1350 ; Assistant Lecturer, £550–£50–£650. Commencing salary according to qualifications and experience, with F.S.S.U. provision and family allowance.

Further particulars should be obtained from the Registrar to whom applications (4 copies) should be sent by 4th February, 1956.

Hospital Services : Senior Appointments

BROMPTON HOSPITAL, S.W.3. The Board of Governors invites applications for the appointment of CONSULTANT RADIOLOGIST (diagnostic) tenable, in the first instance, at Brompton Hospital. Applicants must hold a Diploma in Diagnostic Radiology. The duties involve 3 attendances weekly assessed as 2 notional half-days.

Applications (12 copies), stating date of birth, qualifications and experience in full, with the names of 3 referees, should reach the undersigned not later than 4th February, 1956.

KENNETH A. F. MILES, House Governor.

HAMMERSMITH, WEST LONDON AND ST. MARK'S HOSPITALS BOARD OF GOVERNORS. Part-time CONSULTANT PATHOLOGIST required at St. Mark's Hospital, City-road, E.C.1 (which specialises in diseases of the rectum and colon) for 9 sessions per week. Experience in all branches of hospital pathology desirable. Post vacant 25th July, 1956.

Applications, giving particulars of age, qualifications, and experience, together with names of 3 referees, to reach Secretary, The Board of Governors, The Hammersmith, West London and St. Mark's Hospitals, Ducane-road, London, W.12, by 25th February.

KING'S COLLEGE HOSPITAL, Denmark-hill, London, S.E.5. Applications are invited for the post of Part-time CONSULTANT in Radiotherapy for 3 sessions per week, tenable from 1st April, 1956.

Applications (12 copies), giving details of age, qualifications and experience, and with the names of 3 referees, should be sent to the undersigned not later than 11th February, 1956.

S. W. BARNES, House Governor.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) PSYCHIATRIST AND SUPERINTENDENT (whole-time), Consultant grade, Three Counties Hospital, Arlesey, Beds (1237 Beds). Duties will include outpatient clinics at the Luton and Dunstable Hospital and consultative visits to other hospitals in the Luton and Hitchin Group. Residence provided, for which rent will be charged.

Applications by 20th February, 1956.

(2) CONSULTANT GYNÆCOLOGIST (2 half-days a week, 1 of which must be Thursday morning) Willesden General Hospital, Harlesden-road, N.W.10 (127 Beds).

Applications by 23rd February, 1956.

Hospitals may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited for the appointment of CONSULTANT ANÆSTHETIST at the above Hospital as from 1st April, 1956, for sessions on Monday afternoons and Wednesday mornings.

Applications, giving detailed information and the names and addresses of 3 referees, should reach the undersigned (from whom further information may be obtained) on or before 31st January, 1956. R. E. LAWSON, Secretary and House Governor.

ST. THOMAS'S HOSPITAL, London, S.E.1. Physician to the Radiotherapy Department. Consultant status with Membership of the Medical Committee. Whole-time.

Applications (12 copies), naming 3 referees, to the Clerk of the Governors by 4th February, 1956.

UNIVERSITY COLLEGE HOSPITAL. HOSPITAL FOR TROPICAL DISEASES, 4, St. Pancras-way, London, N.W.1, and QUEEN MARY'S HOSPITAL, ROEHAMPTON. Applications are invited from candidates with experience of medicine in the tropics for the joint appointment of Part-time CONSULTANT PHYSICIAN in Tropical Medicine as from 1st October, 1956, with 4 sessions at the Hospital for Tropical Diseases and 2 sessions at Queen Mary's Hospital, Roehampton, weekly. The Advisory Appointments Committee will interview selected candidates in London in May, 1956, and intending candidates should arrange to be available for interview if required.

Applications, with names of 3 referees, to Administrator and Secretary, University College Hospital, Gower-street, London, W.C.1, by 15th March, 1956.

ISLE OF MAN NATIONAL HEALTH SERVICE. Applications are invited for the part-time post of VISITING CONSULTANT OPHTHALMOLOGIST. The post involves regular fortnightly visits to the Isle of Man and the provision of services for 4 notional half-days at each visit. A further notional half-day is added in respect of time spent in travelling between the United Kingdom and the Isle of Man for each visit. Travelling expenses and subsistence allowances in accordance with an approved scale are paid by the Board. Remuneration and conditions of service, including superannuation, under the Isle of Man scheme are essentially the same as those for similar posts in the United Kingdom.

Application should be made on a form obtainable, with any further information desired, from the undersigned, to whom completed forms should be returned not later than 4th February, 1956. Canvassing will disqualify.

G. S. FORSTER, Secretary,
Isle of Man Health Services Board.
3, Harris-terrace, Douglas, Isle of Man.

BIRMINGHAM REGIONAL HOSPITAL BOARD. South WARWICKSHIRE GROUP AND COLESHILL HALL HOSPITAL. Whole-time CONSULTANT PÆDIATRICIAN (temporary). Tenable for 15/16 months from 16th April, 1956, whilst Consultant Pædiatrician seconded to colonial appointment. Duties mainly at Warwick Hospital, other hospitals in Group and Coleshill Hall Hospital (Mental Deficiency). Higher qualification/wide experience specialty required.

Applications (15 copies), stating name, age, nationality, qualifications, present and previous appointments and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, before 30th January.

CROWTHORNE, BERKSHIRE. BROADMOOR INSTITUTION. (920 Beds for persons of unsound mind of criminal tendencies.) Whole-time CONSULTANT. Wide experience in psychiatry and the D.P.M. necessary. Duties may involve attendance at outpatient clinics. House available.

Applications, naming 3 referees, to Medical Superintendent by 28th January, 1956. Candidates may visit Institution by appointment.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT PSYCHIATRIST AND DEPUTY MEDICAL SUPERINTENDENT (whole-time), Little Plumstead Mental Deficiency Group of hospitals. The Group (1000 Beds) maintains a large Outpatient Service in relation to Mental Deficiency and Child Guidance. Applicants must have D.P.M. and comprehensive experience of operation of M.D. acts and regulations. House available.

Applications (8 copies), stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 30th January, 1956. Candidates invited to visit hospitals by direct arrangement with Medical Superintendent.

EXETER CLINICAL AREA. South-Western Regional HOSPITAL BOARD. Applications are invited for the appointment of a Whole-time ASSISTANT CHEST PHYSICIAN (Senior Hospital Medical Officer grade) at Hawkmoor Chest Hospital, Bovey Tracey, Devon. The successful candidate will have charge of beds at Hawkmoor Chest Hospital under the general direction of the Physician-Superintendent and, in addition, may be given medical duties in the Thoracic Surgical Unit at this Hospital. He will be required to assist in clinic work and at other hospitals in the Clinical Area as determined by the Regional Hospital Board from time to time.

Applications (12 copies), stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 4th February, 1956.

LIVERPOOL REGIONAL HOSPITAL BOARD. Rainhill HOSPITAL. Applications are invited for the post of Whole-time ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer) with duties at the above Hospital. Applicants should possess the D.P.M., and have reasonable experience in psychiatry, including practical knowledge of outpatient work. The duties will include attendance at outpatient clinics outside the Hospital. Married or single accommodation is available, if required, at an appropriate charge.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 4th February, 1956.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD. Applications are invited for the post of Part-time ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer) giving 5 notional half-days weekly to hospitals in the Chester Group. Candidates should have had considerable experience in the administration of anæsthetics, and should be Fellows of the Faculty of Anæsthetists or possess a 2-part Diploma in Anæsthetics.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 4th February, 1956.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD. Warrington GROUP. Applications are invited for the post of Whole-time SENIOR CASUALTY OFFICER in the above Group with duties mainly at Warrington Infirmary. Applicants should possess a higher qualification in surgery. The successful candidate will be required to take charge of the Casualty Department and undertake certain duties in the Orthopædic Department. The appointment will be for a period not exceeding 4 years. Salary determined by age and experience within the range £1400–£1950.

Forms of application from, and to be returned to, Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be received not later than 4th February, 1956.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for appointment as Locum CONSULTANT PATHOLOGIST for a period of 2 years. The appointment is whole-time with duties in the first instance at the Women's Hospital, Maternity Hospital, Royal Liverpool Children's Hospital and the Ear, Nose, and Throat Infirmary. The appointment will be of junior status. Candidates must possess a registrable qualification and M.D. of a University of the British Commonwealth (where this was taken as a higher qualification), or Diploma in Pathology, or M.R.C.P. (London, Edinburgh or Ireland), or Ph.D. in a relative subject taken after qualification.

Applications, giving full particulars of age, qualifications and details of present and previous appointments, should be accompanied by the names of 3 persons to whom reference may be made, and should reach the Secretary, 80, Rodney-street, Liverpool, 1, not later than 28th January, 1956.

MANCHESTER REGIONAL HOSPITAL BOARD. Whole-time or maximum Part-time (if the latter, to devote substantially whole of time to duties) ASSISTANT ANÆSTHETIST (Senior Hospital Medical Officer) to the Blackpool and Fylde Hospital Centre (Victoria Hospital, Blackpool, 344 Beds; Fleetwood Hospital; St. Annes-on-Sea War Memorial Hospital; Lytham Hospital, &c.). Higher qualification in anæsthetics essential; appointee will work under direction of the Consultant Group Anæsthetist and will be required to live in or near Blackpool.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by 31st January, 1956.

MANCHESTER. UNITED MANCHESTER HOSPITALS AND MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the post of CONSULTANT NEUROSURGEON, to commence as soon as possible, for 9 sessions a week (8 at Manchester Royal Infirmary and 1 at Parkside (Mental) Hospital, Macclesfield). Candidates must possess a higher qualification in surgery.

Applications (12 copies), together with the names of 3 referees, should be sent to the undersigned not later than 28th January, 1956.

F. J. CABLE, Secretary to the Board of Governors.

United Manchester Hospitals, Manchester Royal Infirmary, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of Full-time SENIOR HOSPITAL MEDICAL OFFICER (non-resident). Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications to be made on forms obtainable from the undersigned as soon as possible.

F. J. CABLE, Secretary to the Board of Governors.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Whole-time ASSISTANT ANÆSTHETIST based at the Southern General Hospital, Glasgow. Salary (at age 32 and over) on the scale £1500–£50–£1950. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, not later than 30 days after the publication of this advertisement.

SHEFFIELD REGIONAL HOSPITAL BOARD. Maximum Part-time CONSULTANT ANÆSTHETIST for the Sheffield No. 1 Hospital Management Committee Group with duties mainly at the City General Hospital, Sheffield. This Hospital has teaching affiliations with the University of Sheffield. There are Professorial Medical and Gynæcological Units, a Department of Thoracic Surgery and a Regional Cardiological Centre.

Further details and application forms from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 4th February, 1956.

SOUTH SOMERSET CLINICAL AREA. South-Western REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a CONSULTANT RADIOLOGIST to the South Somerset Clinical Area. The appointment will be held on a maximal (9 sessions) part-time basis. The successful candidate will work mainly at Yeovil District Hospital but will be required to visit other hospitals in the Clinical Area including regular weekly sessions at the Taunton and Somerset Hospital, Taunton.

Applications (12 copies), stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 4th February, 1956.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Whole-time CONSULTANT PSYCHIATRIST at Herrison Hospital, Dorchester, Dorset. Candidates should possess the D.P.M. and a higher medical qualification, and should have had wide experience in both inpatient and outpatient work in psychiatry.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 11th February, 1956. Applicants may visit Hospital by local arrangement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires Part-time CONSULTANT PSYCHIATRIST (5 half-days per week) at the Cassel Hospital for Functional Nervous Disorders, Richmond, Surrey. Candidates should possess the D.P.M. and a higher medical qualification. Special experience in psychotherapy and psycho-analysis is essential.

Applications (5 copies), giving date of birth, qualifications, experience, and names of 3 referees, to Secretary (S.1), South West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, by 11th February, 1956. Applicants may visit Hospital by local arrangement.

WESTERN AUSTRALIA. ROYAL PERTH HOSPITAL. Applications are invited for the position of DIRECTOR OF RADIOLOGY at the Royal Perth Hospital. Candidates must be fully qualified Radiologists and preference will be given to those with higher qualifications. Salary £A2960 p.a. The Royal Perth Hospital is a designated Medical Undergraduate Teaching Hospital; it has more than 600 Beds and is extending. The selected candidate may be required to undertake some medical undergraduate teaching, according to his qualifications and experience. A memorandum of further particulars concerning this position will be supplied on request.

Applications must include particulars of qualifications, experience, age, marital status, and the names of 2 referees, and should reach the undersigned on or before 31st March, 1956.

JOSEPH GRIFFITH, Administrator.

WESTERN AUSTRALIA. ROYAL PERTH HOSPITAL. A vacancy will shortly occur for a SENIOR PATHOLOGIST at the Royal Perth Hospital. Salary £A2420 p.a. Conditions equivalent to State Public Service, including long service leave and provision for superannuation. The Royal Perth Hospital is a designated Medical Undergraduate Teaching Hospital; it has more than 600 Beds and is extending. The vacant position is that of Senior Pathologist with responsibility for the Hospital's Service in Pathology under the general supervision of the Professor in Pathology, who is shortly to be appointed. The selected candidate may be required to undertake some medical undergraduate teaching, according to his qualifications and experience. A memorandum of further particulars concerning this position will be supplied upon request.

Applications must include particulars of qualifications, experience, age, marital status, and the names of 2 referees, and should reach the undersigned on or before 31st March, 1956.

JOSEPH GRIFFITH, Administrator.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD. UNIVERSITY OF OTAGO, NEW ZEALAND. JUNIOR SPECIALIST ANÆSTHETIST—Dunedin Hospital—LECTURER IN ANÆSTHETICS—Otago Medical School.

Applications are invited for the above position from those who hold a Degree in Medicine of an approved University. The position is full-time and private practice is not permitted. The position is designated as that of Junior Specialist under the Hospital Employment (Medical Officers) Regulations; salary scale £1290–£1590, plus general wage increase, by annual increments of £50. Commencing salary according to qualifications and experience. Duties will include the practical teaching of anæsthetics to medical and dental students. The position is non-resident.

Applications for the position should be made on the prescribed form obtainable from the Office of the High Commissioner for New Zealand, 415, Strand, London, or from THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2, who will supply further information and conditions of appointment. Applications should be in the hands of the undersigned not later than 10 A.M. on Monday, 23rd January, 1956.

W. A. WILLIAMSON, Secretary.

P.O. Box 946, Dunedin, New Zealand.

Hospital Services : Junior Appointments

ACTON HOSPITAL, Gunnersbury-lane, W.3. Senior HOUSE OFFICER (resident), required as Inpatient Medical Officer (medical and surgical beds).

Applications, with copies of 2 testimonials, to Hospital Secretary within 7 days.

ANNIE McCALL MATERNITY HOSPITAL, Jeffreys-road, S.W.4. Applications are invited from registered Women medical practitioners for the post of RESIDENT OBSTETRIC HOUSE SURGEON. Post recognised for the D.Obst.R.C.O.G. Appointment is for a period of 6 months, vacant 1st February, 1956.

Applications, stating age, qualifications with dates and nationality, accompanied by copies of 3 recent testimonials, should be sent to the Secretary, Annie McCall Maternity Hospital, as soon as possible.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER required in Orthopædic and Traumatic Department, vacant 22nd February, 1956. Pre-registration appointment.

Applications, with copies of 2 testimonials, to Medical Director by 21st January, 1956.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER required in Surgical Department. Post vacant 1st March, 1956. Pre-registration appointment.

Applications, with copies of 2 testimonials, to Medical Director by 21st January, 1956.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (118 Beds.) Applications are invited for the post of CASUALTY OFFICER AND DEPUTY RESIDENT SURGICAL OFFICER (graded as Senior House Officer), vacant 5th February, 1956. Recognised for F.R.C.S. Salary £745 p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

FULHAM MATERNITY HOSPITAL, 5/7, Parsons-green, S.W.6. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (resident) required 5th February, 1956. Candidates may visit the Hospital by arrangement.

Applications to be submitted on forms obtainable from the Hospital Secretary (L3), Fulham Hospital, St. Dunstan's-road, Hammersmith, W.6, immediately.

FULHAM HOSPITAL, St. Dunstan's-road, Hammersmith, W.6. FULHAM AND KENSINGTON HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications invited for appointment at above Hospital as MEDICAL REGISTRAR. Post vacant 26th April, 1956. Candidates may visit the Hospital by arrangement with Hospital Secretary.

Applications (5 copies to be completed) by 27th January, 1956, on forms obtainable from Group Secretary (198L), 5, Collingham-gardens, London, S.W.5.

FOREST GATE HOSPITAL, Forest-lane, London, E.7. Pre-registration OBSTETRIC HOUSE OFFICER (second post) required for 6 months commencing 1st March, 1956. The appointment is recognised for training of candidates for D.Obst.R.C.O.G.

Applications, with names of 2 referees, to the Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 21st January, 1956.

FOUNTAIN GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR PSYCHIATRIC REGISTRAR required for duty in the above Group which comprises some 800 Beds for mental deficiency, mainly for children. There is an Out-patient Department and a considerable amount of teaching and research is done. Possession of D.P.M. preferably with a higher medical qualification is desirable. Experience of children's diseases is an advantage. Canvassing will disqualify but patients may visit the Hospital.

Application forms and further details from Secretary, Fountain Hospital, Tooting-grove, London, S.W.17. Completed application forms should reach the Secretary by 27th January, 1956.

GERMAN HOSPITAL, London, E.8. (General—157 Beds.) Applications are invited for the 6 months resident appointment, now vacant, of Pre-registration HOUSE SURGEON, and should be sent immediately to Group Secretary, Hackney Hospital, London, E.9, quoting GH/PHS.

GROUP LABORATORIES OF GREENWICH AND DEPTFORD AND SEAMEN'S GROUPS. PATHOLOGICAL SENIOR HOUSE OFFICER, vacancy 1st March in above Laboratories. Post recognised for D.Path. of Conjoint Board.

Applications, stating age, qualifications and experience with names of 2 referees, on or before 1st February to Group Secretary, Seamen's Hospital, Greenwich, S.E.10.

HACKNEY HOSPITAL, London, E.9. (General—341 Beds.) Applications for the 6 months appointment of Pre-registration HOUSE SURGEON (post vacant 1st February; recognised for F.R.C.S.) should reach Secretary at above address by 18th January, quoting HH/PHS.

HAMMERSMITH HOSPITAL AND POSTGRADUATE MEDICAL SCHOOL, Ducane-road, London, W.12.

NON-RESIDENT CASUALTY OFFICER (Senior House Officer grading) required 1st March.

RESIDENT HOUSE SURGEON (radiotherapy) required 1st March.

Applications, stating age, qualifications, experience, copies of 2 recent testimonials, to Secretary, Board of Governors, by 23rd January.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, N.21. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR (resident), required at above Hospital. 50 surgical beds, new Outpatient, Casualty and X-ray Departments. Application has been made for this post to be recognised for the "Final" of the F.R.C.S. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Northern Group Hospital Management Committee, Royal Northern Hospital, Holloway, N.7, by 24th January, 1956.

LAMBETH HOSPITAL, Brook-drive, Kennington, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the appointment of HOUSE SURGEON vacant on 11th February, 1956. The appointment is for 6 months and is recognised for the F.R.C.S.

Forms of application from the Physician-Superintendent.

LEWISHAM HOSPITAL, London, S.E.13. Applications are invited for the post of SENIOR HOUSE OFFICER (orthopædics) at the above Hospital, vacant 1st February and recognised for 6 months training for F.R.C.S. Salary £745 p.a., less £150 for residential emoluments.

Applications, stating age, qualifications and experience, with copy testimonials or names of referees, to the Secretary, Group Offices, Lewisham Hospital, S.E.13.

LONDON HOSPITAL, Whitechapel, E.1, and BLACK NOTLEY HOSPITAL, BRAINTREE, ESSEX. Applications are invited for 2 joint appointments of REGISTRAR to the Orthopædic Departments of the above Hospitals (1 post vacant now and the other on 9th March, 1956). The successful candidates will be stationed at Black Notley but will be required to spend certain sessions at the London Hospital. The appointment will be for 1 year renewable.

Applications (12 copies), giving the names and addresses of 3 referees, should be received by the undersigned by 31st January, 1956. H. BRIERLEY, House Governor.

MEMORIAL HOSPITAL, Shooters Hill, Woolwich, S.E.18. PÆDIATRIC HOUSE PHYSICIAN (recognised for D.C.H.), vacant end of February. Not pre-registration. The post entails routine ward and outpatient work as well as experience with neo-nates and includes general and casualty duties.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

MOTHERS' HOSPITAL (Salvation Army), London, E.5. (Maternity—110 Beds.) Applications for the 6 months appointment of RESIDENT OBSTETRIC HOUSE SURGEON (registered) (post vacant 1st February; recognised for M.R.C.O.G.) should be sent to Group Secretary, Hackney Hospital, London, E.9, quoting MH/HS.

MIDDLESEX HOSPITAL, W.1. Applications are invited for the post of Full-time SENIOR REGISTRAR at the Arthur Stanley Institute for Rheumatic Diseases of The Middlesex Hospital; the post provides for 8 sessions at the Arthur Stanley Institute and 3 sessions in the Physical Medicine Department of The Middlesex Hospital. Candidates should have completed a Senior Registrarship in General Medicine.

Further particulars are obtainable from the Administrator, The Arthur Stanley Institute, Peto-place, N.W.1, to whom applications, with the names of 3 referees, should be sent by 31st January, 1956.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of SENIOR REGISTRAR to Psychiatric Department at the Middlesex Hospital.

Application forms, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 31st January.

MIDDLESEX HOSPITAL, W.1. Applications invited for post of SENIOR HOUSE OFFICER in the Department of Physical Medicine and Rheumatism, vacant 1st April.

Forms of application, obtainable from Deputy Superintendent, should be returned, naming 2 referees, by 31st January.

NORTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD.

REGISTRAR in Pathology (resident or non-resident), Southend-on-Sea Group of hospitals, Southend-on-Sea, Essex. Duties mainly at Rochford General Hospital. Post recognised for Diploma in Pathology.

REGISTRAR in Medicine and Infectious Diseases (resident—married quarters available), Rush Green Hospital, Romford, Essex. Duties may include work in special Regional Poliomyelitis Unit.

MEDICAL REGISTRAR (resident), Tilbury and Riverside General Hospital, Tilbury, Essex.

ANÆSTHETIC REGISTRAR (resident or non-resident), St. Andrew's Hospital, Billericay, Essex. Post recognised for D.A. and F.F.A.R.C.S.

ANÆSTHETIC REGISTRAR (non-resident), General Hospital, Southend-on-Sea, Essex. Post recognised for F.F.A.R.C.S.

SURGICAL REGISTRAR (resident), Tilbury and Riverside General Hospital, Tilbury Branch, Tilbury, Essex. Busy Surgical Unit and Outpatient Department. Post recognised for F.R.C.S.

SURGICAL REGISTRAR (non-resident to reside near Hospital), Whipps Cross Hospital, Leytonstone, E.11. Post recognised for F.R.C.S.

Appointments subject to review after 1 year.

Application forms from Secretary, 11A, Portland-place, W.1, to be returned by 28th January, 1956.

PLAISTOW HOSPITAL, Samson-street, London, E.13. Applications are invited for appointment of SENIOR HOUSE OFFICER (resident) to the Chest Unit and Infectious Diseases Unit at the above Hospital for 12 months. Previous experience in diseases of the chest is desirable. Excellent experience is afforded in the investigation of chest and infectious diseases cases and there are good facilities for postgraduate study for the M.R.C.P. examination.

Applications, with copies of recent testimonials, to M. J. HUNTLEY, Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 18th January, 1956.

PLAISTOW HOSPITAL, Samson-street, London, E.13. (185 Beds.) Applications are invited for the appointment of RESIDENT HOUSE PHYSICIAN (post-registration or pre-registration second post) for 6 months commencing early February, in the Chest Unit and Infectious Diseases Unit. Some experience in diseases of the chest desirable. The position offers good opportunities for experience in general medicine.

Applications, with copies of recent testimonials, to M. J. HUNTLEY, Group Secretary, West Ham Group Hospital Management Committee, Stratford, London, E.15, by 25th January, 1956.

PRINCESS BEATRICE HOSPITAL, Earls Court, S.W.5. Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN for 6 months. Vacancy from 1st February, 1956.

Applications, stating age, qualifications, and with not more than 3 testimonials, to House Governor, not later than 19th January, 1956.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, London, E.15.

HOUSE PHYSICIAN (pre-registration).

HOUSE SURGEON (pre-registration).

JUNIOR CASUALTY OFFICER (third post).

All these posts are for 6 months commencing 13th February, 1956.

Applications, with copies of recent testimonials, to Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 28th January, 1956.

ROYAL EYE HOSPITAL. King's College Hospital Group. Applications are invited for the post of SENIOR HOUSE OFFICER, vacant from 1st April, 1956.

Applications, together with copies of recent testimonials, should be made to the Secretary, The Royal Eye Hospital, St. George's-circus, S.E.1, as soon as possible.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of SENIOR RESIDENT ANÆSTHETIST. Applicants must be registered medical practitioners of not more than 10 years standing. The appointment is for 6 months from 1st April, 1956, with duties at the North Western Branch and Hampstead General Hospital. Salary in accordance with the Ministry of Health scale for Senior House Officers.

Application forms may be obtained from the Secretary, The Royal Free Hospital, Gray's Inn-road, London, W.C.1, to whom they should be returned not later than 1st February, 1956.

ROYAL FREE HOSPITAL GROUP. Applications are invited for the post of JUNIOR RESIDENT ANÆSTHETIST. Applicants must be registered medical practitioners of not more than 10 years standing. The appointment is for 6 months, duties to commence on 1st April, 1956. Salary in accordance with the Ministry of Health scale for House Officers.

Application forms may be obtained from the Secretary, The Royal Free Hospital, Gray's Inn-road, London, W.C.1, to whom they should be returned not later than 1st February, 1956.

ROYAL FREE HOSPITAL GROUP. Applications are invited from registered medical practitioners for the post of SENIOR CASUALTY OFFICER at The Royal Free Hospital. The appointment is full time, resident for 6 months. Duties to commence 1st April, 1956. Salary and conditions of service in accordance with those laid down by the Ministry of Health for Senior House Officers.

Application forms may be obtained from the Secretary, The Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 1st February, 1956.

ROYAL NATIONAL ORTHOPAEDIC HOSPITAL, 234, Great Portland-street, London, W.1. Applications are invited for the appointment of ORTHOPÆDIC REGISTRAR (full-time) non-resident. Preference will be given to candidates with a higher surgical qualification. Duties to commence on 12th April.

Applications to be received not later than 11th February. Forms of application can be obtained from the House Governor at 234, Great Portland-street, London, W.1.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Brockley Hill, STANMORE, MIDDLESEX. Applications are invited for the post of Locum RESIDENT ANÆSTHETIC REGISTRAR from 17th March to 17th June, 1956. The Hospital is recognised for the D.A.

Applications, with names of 3 referees, to be submitted not later than 11th February, 1956, to the House Governor, 234, Great Portland-street, London, W.1.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Orthopædic Surgery to fill a vacancy in the approved trainee establishment at the Camberwell Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 28th January, 1956.

SPRINGFIELD HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRARS. 2 required. The Hospital is a large one and offers excellent experience in diagnosis and treatment of all forms of mental disorder including the neuroses. Every variety of modern treatment is carried out in a well-equipped treatment centre. Single accommodation available. Candidates may visit the Hospital by arrangement.

Apply to Group Secretary, Springfield Hospital, Tooting, S.W.17, for application forms which should be returned, duly completed, on or before 28th January, 1956.

ST. BARTHOLOMEW'S HOSPITAL, E.C.1. Applications are invited for the post of SURGICAL CASUALTY REGISTRAR for a period of 1 year, with possible re-election up to 2 years. This post is recognised for the F.R.C.S. and is tenable from 1st March next.

Applications, together with the names of 2 referees, should be submitted to the undersigned before 25th January.

C. C. CARUS-WILSON, Clerk to the Governors.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. SENIOR HOUSE OFFICER (general surgery and genito-urinary). Post recognised for F.R.C.S.

Applications, stating age, qualifications, experience, and names of 2 referees, to Group Secretary, Wandsworth Hospital Group, at above address by 21st January.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. ANÆSTHETIC REGISTRAR required 1st April. Post recognised for D.A. and F.F.A.R.C.S.

Application forms (send stamped addressed large foolscap envelope) obtainable from Group Secretary, Wandsworth Hospital Group, at above address, to be completed and returned by 28th January.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. SENIOR HOUSE OFFICER (anæsthetics) required, vacant 6th February. Recognised for D.A. and F.F.A.R.C.S.

Applications, stating age, qualifications, experience, and names of 2 referees, to Group Secretary, Wandsworth Hospital Group, at above address by 21st January.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified practitioners, for the post of NON-RESIDENT CASUALTY SURGEON. Candidates must have held an appointment as House Surgeon at this Hospital or at another Hospital approved by the Board of Governors. The appointment is for a first period of 6 months with effect from 1st March, 1956: remuneration to be at Senior House Officer rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 31st January, 1956.

ST. MARY'S HOSPITAL, W.2. Applications are invited for the post of Part-time OUTPATIENT SURGICAL ASSISTANT for 4 notional half-days per week (Tuesday P.M., Wednesday A.M., Thursday P.M., Friday P.M.). Graded Senior House Officer. The appointment will be for a first period of 12 months and the successful candidate will be required to commence duties as soon as possible.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service grading of previous and present appointments, together with names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 31st January, 1956.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified practitioners for the post of Part-time CLINICAL ASSISTANT to the Department of Physical Medicine at above Hospital for 4 notional half-days per week; graded Registrar. The appointment is for a first period of 6 months as from a date to be arranged.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, by 25th January, 1956.

ST. MARY'S HOSPITAL, W.2. Applications are invited from suitably qualified registered practitioners for the post of RESIDENT ANÆSTHETIST. The appointment is for a first period of 6 months as from a date to be arranged; remuneration to be at House Officer rates.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, details and National Health Service gradings of previous and present appointments, together with the names and addresses of 3 referees, should reach ALAN POWDITCH, House Governor, not later than 25th January, 1956.

ST. MARY'S HOSPITAL CHILDREN'S DEPARTMENT, PRINCESS LOUISE (KENSINGTON) HOSPITAL FOR CHILDREN, St. Quintin-avenue, London, W.10. HOUSE OFFICERS (2) required (second or third post). Pre-registration candidates considered. Vacant 1st March, 1956, as follows:—

(*a*) Mainly medical.
(*b*) E.N.T. and casualty.

Recognised for the D.C.H.

Applications, with names of 2 referees, to undersigned not later than 28th January, 1956. A. C. YOUNG, Secretary.

ST. MARK'S HOSPITAL, City-road, London, E.C.1. Applications invited from Senior Registrars who have completed their training, or from Registrars who have completed their appointments, for 2 posts of RESIDENT SURGICAL OFFICER. Part of time non-resident by arrangement. Salary at the rate of £1400 or £965 respectively. Appointments tenable for 6 months from 1st April, with possibility further extension 6 months.

Applications, stating age, qualifications, experience, names of 2 referees, to Secretary, Board of Governors, The Hammersmith, West London and St. Mark's Hospitals, Ducane-road, London W.12, by 31st January.

ST. GEORGE-IN-THE-EAST HOSPITAL, Raine-street, Wapping, E.1. Applications are invited for the post of HOUSE SURGEON (pre- or post-registration). Post vacant 24th January, 1956. Tenable for 6 months. Salary, &c., in accordance with national scale.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be forwarded to the Medical Superintendent.

ST. NICHOLAS HOSPITAL, Tewson-road, Plumstead, S.E.18. SENIOR HOUSE OFFICER (anæsthetics), vacant end of February. Recognised for F.F.A.R.C.S. and D.A. 6 months appointment and may then be renewed. Salary £745, less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. Obstetric AND GYNÆCOLOGICAL HOUSE SURGEON (resident), vacancy early March, 1956. Post recognised for D.Obst.R.C.O.G.

Applications now, naming 2 referees, to Medical Superintendent.

ST. STEPHEN'S HOSPITAL, Chelsea, S.W.10. Senior HOUSE PHYSICIAN (Senior House Officer), general medicine. Some teaching. Vacancy March, 1956.

Applications now, naming 2 referees, to Medical Superintendent.

THORPE COOMBE MATERNITY HOSPITAL, Walthamstow, E.17. (58 Beds.) Applications are invited from medical Women for the post of JUNIOR OBSTETRICS OFFICER (graded House Officer), vacant 15th February, 1956. The Hospital is recognised by The Royal College of Obstetricians and Gynæcologists.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Hospital Management Committee, Forest Group, Langthorne-road, E.11.

UNIVERSITY COLLEGE HOSPITAL, Gower-street, W.C.1. Applications are invited for the post of ASSISTANT BACTERIOLOGIST in the Department of Clinical Pathology (graded Junior Hospital Medical Officer). The post is vacant 1st March. Experience in pathology desirable.

Applications, with names of 2 referees, to Administrator and Secretary, by 28th January.

WANSTEAD HOSPITAL, Harmon Hill, E.11. (191 Beds.) Applications are invited for the post of OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEON, vacant 10th February, 1956. The appointment is recognised for the D.Obst. R.C.O.G.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to the Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WHIPPS CROSS HOSPITAL, London, E.11. Leytonstone (NO. 10) HOSPITAL GROUP. Applications are invited for the post of REGISTRAR in the Tuberculosis Unit at above Hospital. Post vacant 1st February and tenure for approximately 1 year.

Application forms from the Hospital Secretary to be returned by 23rd January, 1956.

WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. RESIDENT CASUALTY OFFICER required 6th February, Senior House Officer. Post recognised under Fellowship regulations.

Applications, with full particulars and names of 2 referees, to Hospital Secretary by 25th January, 1956.

ACCRINGTON. VICTORIA HOSPITAL. (114 acute beds.) HOUSE SURGEON required 9th February, 1956, for above Hospital. Recognised for pre-registration and F.R.C.S.

Applications to Secretary, Blackburn and District Hospital Management Committee, Hospital Management Committee Office, Royal Infirmary, Blackburn, Lancs.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDE-VILLE HOSPITAL. SENIOR HOUSE OFFICER in the Rheumatism Research Centre with additional duties in the Area Department of Medicine.

Applications, with names of 2 referees, to the Administrative Officer.

ABBOTS LANGLEY, WATFORD, HERTFORDSHIRE. LEAVESDEN HOSPITAL. (2378 Beds for mental defectives.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in Psychiatry. Higher qualification in psychiatry desirable. Hospital may be visited by direct appointment with Physician-Superintendent. Married quarters available.

Application forms obtainable from, and returnable to, Group Secretary, Leavesden Hospital Management Committee, Leavesden Hospital, Abbots Langley, Watford, Herts, by 9th February, 1956.

ABERYSTWYTH GENERAL HOSPITAL. Mid-Wales HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER at the above Hospital. Post recognised for F.R.C.S. Vacant on 31st January, 1956. The post is resident.

Applications, stating age, nationality, qualifications, and experience, accompanied by copies of 2 recent testimonials, should be sent to the Group Secretary, "Orlandon," 31, North-parade, Aberystwyth, within 14 days from the publication of this advertisement.

ALEXANDRIA, DUNBARTONSHIRE. VALE OF LEVEN HOSPITAL. Applications are invited for the post of RESIDENT HOUSE OFFICER in Surgery for the 6 months period commencing 1st February, 1956. This post is not recognised for pre-registration.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, to be forwarded to the Medical Superintendent, Vale of Leven Hospital, Alexandria, Dunbartonshire.

ASHFORD HOSPITAL, Ashford, Middlesex. Staines GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, 2 RESIDENT HOUSE SURGEONS (Male) for general surgical duties. 6 months appointments vacant (1) on 5th March and (2) on 8th March, 1956. Preference given to pre-registration candidates.

Applications, stating age, qualifications, and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

ASHTON, HYDE AND GLOSSOP HOSPITAL MAN-AGEMENT COMMITTEE. SENIOR HOUSE OFFICER (obstetrics/gynæcology) required at Ashton-under-Lyne General Hospital. There are 82 obstetric and 26 gynæcological beds. Recognised for M.R.C.O.G. Vacant 6th February.

Applications, with copies of 2 testimonials, should be forwarded to the Group Secretary, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancs.

ASHTON, HYDE AND GLOSSOP HOSPITAL MANAGE-MENT COMMITTEE.

SENIOR HOUSE OFFICER (general surgery) required at Ashton-under-Lyne General Hospital, vacant 27th January.

2 HOUSE SURGEONS required at Ashton-under-Lyne General Hospital. Preference given to pre-registration applicants. Recognised for F.R.C.S. (Eng.). Vacant mid-February.

Applications, with copies of 2 testimonials, to Group Secretary, General Hospital, Ashton-under-Lyne, Lancs.

BATH. ST. MARTIN'S HOSPITAL. Applications are invited from medical practitioners for the post of HOUSE SURGEON (orthopædic and traumatic) at above Hospital, which will be vacant approximately 17th February, 1956. Post offers opportunity not only in traumatic surgery but in "cold" orthopædics and surgery of arthritis. Post is recognised under F.R.C.S. regulations and for pre-registration purposes.

Applications, stating age, qualifications and experience with 2 testimonials, should be forwarded to the Group Secretary, Bath Hospital Management Committee, Manor Hospital, Combe Park, Bath, by 21st January, 1956.

BATH. ROYAL UNITED HOSPITAL. Applications are invited from medical practitioners for the post of HOUSE SURGEON at the above Hospital (vacant approximately 15th March, 1956). Post is recognised for pre-registration purposes.

Applications, stating age, qualifications and experience with 3 testimonials, should be forwarded to the Group Secretary, Bath Hospital Management Committee, Manor Hospital, Combe Park, Bath, by 31st January, 1956.

BATH HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from medical practitioners for the post of HOUSE SURGEON (gynæcology and obstetrics) to the Bath Group of hospitals, which is vacant approximately 18th March, 1956. The post is recognised for the D.Obst.R.C.O.G. and also for pre-registration purposes.

Applications, stating age, qualifications and experience with 3 testimonials, should be forwarded to the Group Secretary, Manor Hospital, Combe Park, Bath, to reach him by 31st January, 1956.

BEDFORD GENERAL HOSPITAL. (437 Beds.) Pre-registration HOUSE SURGEON required immediately. The appointment offers exceptional opportunities for general experience in busy acute Surgical Unit.

Detailed applications, with copies of 2 recent testimonials, to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. The following resident appointments are available for the 6 months period commencing 7th January, 1956. Recognised for pre-registration candidates but registered medical practitioners may apply.

The Queen Elizabeth Hospital
HOUSE SURGEON to the Ophthalmic Department.
HOUSE SURGEON to the E.N.T. Department.

The General Hospital
HOUSE SURGEON to the E.N.T. Department.

Forms of application may be obtained from the undersigned.

G. A. PHALP,
Secretary and Principal Administrative Officer.
The United Birmingham Hospitals,
Queen Elizabeth Hospital, Birmingham, 15.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL. Applications are invited for the appointment of SURGICAL REGISTRAR (non-resident), in the grade of Registrar, vacant 28th March 1956. Preference will be given to candidates holding a higher qualification. Residence in the Hospital will be required when the Resident Surgical Officer is absent.

Forms of application may be obtained from the House Governor, The Children's Hospital, Ladywood-road, Birmingham, 16, and should be returned not later than 28th January, 1956. G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) Birmingham (Dudley Road) Group, Birmingham, 18

REGISTRAR (obstetrics/gynæcology) for Marston Green Maternity Hospital, near Birmingham. Recognised for Obstetric part of M.R.C.O.G. affiliated to Medical School for training students. Resident. Experience specialty essential.

(2) Birmingham (Sanatoria) Group, Yardley Green Hospital, Birmingham, 9

REGISTRAR (chest diseases) for Yardley Green Hospital (417 Beds) Birmingham Chest Clinic. To complete clinical team for tuberculous beds and observation ward for non-tuberculous chest conditions; active bronchoscopy clinic; developing respiratory function unit. Extensive chest clinic work. Association with general medical work can be arranged.

(3) Stafford Group, 13, Foregate-street, Stafford

REGISTRAR (pathology). Duties mainly at Staffordshire General Infirmary (175 Beds). Experience specialty/higher qualification desirable.

(4) West Bromwich and District Group, Edward-street, West Bromwich

REGISTRAR (general surgery) for Hallam Hospital (456 Beds). Resident. Post offers wide surgical experience. Recognised for F.R.C.S.

Application forms from Group Secretaries, to be returned before 30th January, 1956.

BIRMINGHAM, 15. ROYAL ORTHOPÆDIC HOSPITAL. (Recognised by Royal College of Surgeons. 336 Beds for long and short term orthopædic cases (non-traumatic) and extensive outpatient services.) SENIOR HOUSE OFFICER (resident). Residential charge £190 p.a. Registered medical practitioner preferably with orthopædic experience.

Applications, with testimonials or names of referees, to Administrator.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. (780 Beds.) SENIOR HOUSE OFFICER in Pathological Department (resident or non-resident). Previous House appointments essential. Must be available about 13th February, 1956.

Detailed applications, with copies of 2 recent testimonials, to Secretary.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. (350 Beds.) SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required. Recognised pre-registration post. Vacant early February.

Apply, naming 2 referees, to Group Secretary at above address.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (obstetrics and gynæcology). Applications invited from registered or pre-registration practitioners. Vacant mid-February. Recognised for D.Obst. R.C.O.G. Departmental beds 69.

Apply, naming 2 referees, to Group Secretary at above address.

BLACKPOOL. VICTORIA HOSPITAL. House Physician. Pre-registration post available in mid-March at this modern Hospital serving the Blackpool and Fylde area.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, should be addressed to the Hospital Secretary.

BLACKPOOL. VICTORIA HOSPITAL. (348 Beds.) HOUSE OFFICER (surgical). Pre-registration post recognised for F.R.C.S. Modern well-equipped hospital with excellent facilities for gaining experience.

Applications, stating age, qualifications, experience, together with the names and addresses of 2 referees, should be sent to the Hospital Secretary.

BLACKPOOL AND FYLDE HOSPITAL MANAGEMENT COMMITTEE. ANÆSTHETIST (Junior Hospital Medical Officer grade) for duties at hospitals within the Group but main duties at the Victoria Hospital, Blackpool. New establishment includes 2 Senior House Officer posts. Possession of the D.A. an advantage. Residence in Hospital optional. Tenure limited to period of 4 years but holder eligible for reappointment.

Applications, giving details of age, qualifications and experience, together with the names and addresses of 3 referees, should be addressed to the Group Secretary.

BLACKPOOL AND FYLDE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (pædiatrics). This combined post offers experience at the Victoria Hospital (348 Beds) with a 30-Bedded Children's Ward and at the Devonshire Road Hospital (128 Beds) with Infectious Diseases and E.N.T. patients. Approval recently given to increase in number of Consultant Pædiatrician sessions with view to development of Pædiatric Service. Post available from 1st April.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Group Secretary, Victoria Hospital, Blackpool.

BOLTON DISTRICT GENERAL HOSPITAL. (804 Beds.) RESIDENT HOUSE PHYSICIAN, now vacant, tenable for 6 months and recognised under the Pre-registration Service Scheme.

Applications, stating age, nationality, qualifications, experience and the names of 2 referees, to Group Secretary, Bolton and District Hospital Management Committee, The Royal Infirmary, Bolton.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the immediate appointment of SENIOR HOUSE OFFICER (resident), orthopædics and casualty combined. The post is recognised for the F.R.C.S. examination and is normally tenable for 12 months.

Applications to the Deputy Hospital Secretary at the Hospital.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics) required immediately, for duties throughout Group, mainly at Royal Infirmary, Blackburn. Residence at Queen's Park Hospital, Blackburn. Post recognised for D.A. and F.F.A. R.C.S.

Apply to Secretary of Committee, Hospital Management Committee Office, Royal Infirmary, Blackburn, giving names of 2 referees.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following posts which fall vacant in January, 1956:—

Victoria Hospital, Accrington (112 acute beds)
HOUSE PHYSICIAN.

Queen's Park Hospital, Blackburn (644 general beds)
HOUSE PHYSICIAN.

Royal Infirmary, Blackburn (262 acute beds)
HOUSE SURGEON.

All posts recognised for pre-registration purposes. House Surgeon post recognised for F.R.C.S.

Apply to Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BRAINTREE, ESSEX. BLACK NOTLEY HOSPITAL. Applications invited for posts of HOUSE SURGEON and HOUSE PHYSICIAN. The successful applicant will serve 6 months as House Surgeon followed by 6 months as House Physician. First, second, third, or pre-registration posts. Surgical post includes duties in general surgical and gynæcological wards. Recognised for F.R.C.S. Medical post includes duties in medical and pædiatric wards.

Applications, with copies of 3 testimonials, to Group Secretary, Colchester Hospital Management Committee, 14, Pope's-lane, Colchester, Essex.

BRISTOL. SOUTHMEAD GENERAL HOSPITAL GROUP MANAGEMENT COMMITTEE. Required at Southmead Hospital (571 Beds, including 133 maternity) RESIDENT SENIOR HOUSE OFFICER (urological surgery) for 12 months commencing 1st February, 1956. Post recognised for F.R.C.S. examination.

Applications, on forms to be obtained from the Group Secretary, Southmead Hospital, Bristol, to be returned not later than 21st January, 1956.

BRISTOL (near). HAM GREEN HOSPITAL, Pill, near BRISTOL. Applications are invited for the post of SENIOR HOUSE OFFICER in the tuberculosis wards (188 Beds) of the above Hospital. The Hospital is fully equipped for the modern treatment of pulmonary tuberculosis, including regular major thoracic surgery.

Apply, Secretary, Ham Green Hospital, Pill, near Bristol.

BRISTOL. COSSHAM AND FRENCHAY HOSPITAL MANAGEMENT COMMITTEE. Vacancies on 1st February, 1956, for HOUSE SURGEONS in General Surgery at Cossham Memorial Hospital (88 Beds) and at Frenchay Hospital (513 Beds). Tenure 6 months. Recognised pre-registration posts but fully registered practitioners will also be considered. Appointments are recognised for F.R.C.S. examinations.

Apply to Group Secretary, Frenchay Hospital, Bristol, quoting qualifications, experience and names of 2 referees.

BRISTOL. THE BOARD OF GOVERNORS OF THE UNITED BRISTOL HOSPITALS AND THE SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited by the above Boards from registered medical practitioners for the joint appointment of REGISTRAR in E.N.T. Surgery. This post becomes vacant on 1st April, 1956. The appointment will be held for 1 year in the first instance, and be renewable for a further year. The successful candidate will be appointed to work for the first year in the Bath Group of hospitals. The appointment is recognised as satisfying requirements for the examination for the F.R.C.S. England with Otolaryngology as a special subject, and the Diploma in Laryngology and Otology.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 27th January, 1956.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. Medical REGISTRAR (non-resident) for 1 year in the first instance, from 3rd March, renewable for second year.

Apply, with full particulars and names of 3 referees, to Secretary by 28th January.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. House SURGEON for 6 months from 28th February. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to the Secretary by 28th January. Interviews 6th February.

CAMBRIDGE. ADDENBROOKE'S HOSPITAL. 2 House PHYSICIANS, each for 6 months, 1 from 1st March, other from 15th March. Recognised Pre-registration Service.

Apply, stating age, nationality, qualifications and experience with dates, and copies of 3 testimonials, to Secretary, by 28th January. Interviews 7th February.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the post of SENIOR HOUSE OFFICER in Surgery.

Application forms obtainable from the Secretary, United Cardiff Hospitals, Cardiff Royal Infirmary.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the appointment of REGISTRAR in the Department of Child Health at the Cardiff Royal Infirmary. The appointment, which is non-resident, commences on 1st March.

Application forms can be obtained from the Secretary, the United Cardiff Hospitals, Cardiff Royal Infirmary, Newport-road, Cardiff.

CARLISLE. CUMBERLAND INFIRMARY. (338 Beds.) Applications are invited for the appointments of 2 HOUSE OFFICERS (general surgery) for the 6 months period commencing 1st February, 1956. The posts are recognised for pre-registration purposes and for the F.R.C.S. examination.

Applications, stating age, giving details of education, training and experience, together with the names of 2 referees, should be sent to the Group Secretary, Cumberland Infirmary, Carlisle, as soon as possible.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) GYNÆCOLOGICAL HOUSE SURGEON required at Highland Court Annexe, a unit of 25 gynæcological beds situated 3 miles from the above Hospital, with all ancillary services available. Recognised for M.R.C.O.G. 6 months appointment. Post now vacant. National Health Service salary and conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CHELTENHAM GENERAL HOSPITAL. (226 Beds.) 2 HOUSE SURGEONS (pre- or post-registration) required. Both posts recognised for the F.R.C.S. and giving a large and wide experience in general surgery, gynæcology, orthopædics and genito-urinary surgery. Posts vacant now.

Apply STANLEY T. DAVIS, Group Secretary, General Hospital, Sandford-road, Cheltenham.

CHESTERFIELD ROYAL HOSPITAL. Senior House OFFICER required at above Hospital for Accident and Orthopædic Department. Post recognised for F.R.C.S. training and offers valuable experience. National salary and conditions.

Apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CHESTERFIELD ROYAL HOSPITAL. House Physician (Senior House Officer grade) required at above Hospital, 31st January, for 36-Bed Unit (shortly to be increased to 63 Beds). Post offers experience in acute general medicine, pædiatrics, diabetics, and dermatology. National salary and conditions.

Apply M. H. BOONE, Secretary, Chesterfield Hospital Management Committee.

CHESTERFIELD ROYAL HOSPITAL. House Surgeon required immediately at above Hospital. Post recognised for Pre-registration Service and F.R.C.S. purposes. National salary and conditions.

Apply M. H. BOONE, Secretary.

CHERTSEY, SURREY. ST. PETER'S HOSPITAL (late Botley's Park War Hospital). (430 Beds.) ORTHOPÆDIC HOUSE SURGEON required from 1st February, 1956. Senior House Officer or House Officer (Intern) grade. Post recognised for F.R.C.S. and Pre-registration Service. Preference given to provisionally registered candidates. Salary in accordance with terms and conditions of National Health Service.

Applications, together with names and addresses of referees, to be sent to the Physician-Superintendent, St. Peter's Hospital, as soon as possible.

CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum GYNÆCOLOGY AND OBSTETRIC REGISTRAR required for 1 week, 3rd–10th February.

Apply Group Secretary, 174, Broyle-road, Chichester.

CHICHESTER. ST. RICHARD'S HOSPITAL. (400 Beds.) Applications are invited for the post of RESIDENT SURGICAL OFFICER (Registrar status) vacant early March, 1956, for 1 year in first instance. Hospital recognised for F.R.C.S.

Forms of application from Group Secretary, 174, Broyle-road, Chichester.

COLCHESTER HOSPITAL MANAGEMENT COM-MITTEE. Applications are invited for :—

Essex County Hospital, Colchester (188 Beds)

HOUSE OFFICER (surgical).

HOUSE PHYSICIAN.

First, second, third or pre-registration posts, tenable for 6 months.

Black Notley Hospital, Braintree (536 Beds)

HOUSE OFFICER (orthopædic surgery). First, second, third or pre-registration post, tenable for 6 months. Recognised for F.R.C.S.

Essex County Hospital (19 gynæcological beds)

Colchester Maternity Hospital (22 obstetric beds)

HOUSE OFFICER (Male or Female), obstetric and gynæcological. First, second, third or pre-registration post; tenable for 6 months.

Applications, with copies of 3 testimonials, to Group Secretary, 14, Pope's-lane, Colchester, Essex.

COLCHESTER HOSPITAL MANAGEMENT COM-MITTEE. Applications are invited for :—

Clacton and District Hospital, Clacton-on-Sea (58 Beds)

SENIOR HOUSE OFFICER (Resident Surgical Officer). Post tenable for 1 year.

Applications, with copies of 3 testimonials, to Group Secretary, 14, Pope's-lane, Colchester, Essex.

DEWSBURY, YORKSHIRE. STAINCLIFFE GENERAL HOSPITAL. Applications are invited for the pre-registration appointment of HOUSE OFFICER (general surgery), vacant on 1st February, 1956, and tenable for 6 months. The Hospital has a Surgical Unit of 52 Beds. Casualty duties are shared with other House Officers.

Applications, with full details and quoting this journal, to the Administrative Officer at the Hospital.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House PHYSICIAN (pre-registration), vacant 7th February, 1956.

Apply, giving full particulars with copies of 2 testimonials, to Hospital Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. Senior HOUSE OFFICER (anæsthetics), vacant immediately. Recognised for D.A.

Apply, stating full details with copies of 2 testimonials, to Hospital Secretary.

DERBY. DERBYSHIRE ROYAL INFIRMARY. House SURGEON (pre-registration) or SENIOR HOUSE OFFICER for general surgery, vacant immediately.

Apply, stating full details with 2 testimonials, to Hospital Secretary.

DONCASTER ROYAL INFIRMARY. Doncaster Hospital MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in the Orthopædic Department. Vacant end January.

Applications to the Secretary to the Committee at the Doncaster Royal Infirmary.

DONCASTER ROYAL INFIRMARY. (330 Beds.) Don-CASTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON, vacant end January. Approved as pre-registration post and recognised for F.R.C.S.

Applications to the Secretary to the Committee, at the Doncaster Royal Infirmary.

DONCASTER. WESTERN HOSPITAL. Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER in the grade of Junior Hospital Medical Officer.

Applications, stating age, qualifications and experience, together with copies of 3 recent testimonials, should be forwarded to the Secretary to the Committee, Doncaster Hospital Management Committee, Doncaster Royal Infirmary.

DORCHESTER. DORSET COUNTY HOSPITAL. (113 Beds.) HOUSE SURGEON required (Male or Female). Resident post vacant late January and tenable for 6 months. Recognised for F.R.C.S. examination and approved for Pre-registration Service.

Applications, stating age, experience, qualifications and nationality, together with copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset, immediately.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

Wordsley Hospital (478 Beds)

SENIOR HOUSE OFFICER (medical). Post vacant February.

Apply Group Secretary, Guest Hospital, Dudley, Worcs.

DURHAM. DRYBURN HOSPITAL. (303 Beds.) House PHYSICIAN (general medicine). Approved pre-registration post. Post vacant 1st February, 1956.

Apply, with names and addresses of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. (1) SENIOR ORTHOPÆDIC REGISTRAR, United Norwich Hospitals. Main hospital Norfolk and Norwich—441 Beds. Trainee post. Higher qualification desirable.

(2) REGISTRAR in Geriatrics, Norfolk and Norwich Group of hospitals (total geriatric beds 590). Main hospital is the West Norwich Hospital where the Geriatric Department is the pivotal point of the area service which is being developed on active lines under the Consultant Physician in Geriatrics. Appointment for 1 year, renewable for second year.

Applications, stating age, experience, and names of 3 referees, to Secretary of Board, 117, Chesterton-road, Cambridge, by 30th January, 1956. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary, Norfolk and Norwich Hospital.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 1st February, 1956. Pre-registration post. Recognised for F.R.C.S.

Applications, stating age, qualifications, and experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary, at above address.

EPSOM, SURREY. ST. EBBA'S HOSPITAL. St. Ebba's AND BELMONT GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of 2 REGISTRARS (1 for seconding to the Observation Ward, St. John's Hospital, London, S.W.11) at above Hospital. The Hospital (865 Beds) is principally concerned with the treatment of voluntary cases of good prognosis and has over 1300 admissions annually. There are full facilities for psychological and physical investigations and all modern treatment methods are used. The Hospital has Outpatient Departments and a special unit for juvenile psychiatric cases. Tutorials are given by senior staff in preparation for the D.P.M. and arrangements can be made to attend London neurological clinics. Full residential amenities are available. Candidates may visit the Hospital by appointment with the Physician-Superintendent.

Application forms may be obtained from the Group Secretary, St. Ebba's and Belmont Group Hospital Management Committee, Group Office, Belmont Hospital, Brighton-road, Sutton, Surrey, and completed forms should be returned to him within 2 weeks of the appearance of this advertisement.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. Applications are invited for the post of RESIDENT PATHOLOGIST (Senior House Officer grade) for duties in the Area Laboratory and at other hospitals in the Group. The Area Laboratory is recognised for the Diploma of Pathology of the Royal Colleges of Physicians and Surgeons. Further information can be obtained from the Senior Pathologist. Appointment tenable for 1 year.

Applications, with the names of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, immediately.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE SURGEON (pre-registration post), vacant 22nd March, 1956. Duties with general Surgical Unit, doing some genito-urinary work. Post recognised by the Royal College of Surgeons. 6 months appointment.

Applications, with the names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER (non-resident), required in the Casualty Department at above Hospital.

Apply, stating age, nationality, qualifications and experience, together with names and addresses of 2 referees, to Group Secretary, Edgware General Hospital, by 28th January, 1956.

FARNBOROUGH HOSPITAL, Kent. (800 Beds.) Senior HOUSE OFFICER in Anæsthetics required for 1 year from 28th February. Recognised for D.A. and F.F.A.R.C.S.

Apply, stating age, qualifications with dates, and experience, and naming 3 referees, to Administrative Officer by 28th January.

GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following pre-registration HOUSE SURGEON appointments to commence on 1st February, 1956.

Morriston Hospital (501 Beds)—2 vacancies.
Swansea Hospital (403 Beds)—1 vacancy.

Applications, with full particulars together with copies of 2 testimonials, should be forwarded to the Group Secretary, Glantawe Hospital Management Committee, St. Helen's-road, Swansea.

GLASGOW ROYAL MENTAL HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER. Salary £775 p.a.–£50–£1075.

Applications, with the names of 2 referees, to be sent to the Physician-Superintendent, Glasgow Royal Mental Hospital, 1055, Great Western-road, Glasgow, W.2, as soon as possible.

GLASGOW VICTORIA HOSPITALS BOARD OF MANAGEMENT. E.N.T. SENIOR HOUSE OFFICER required (resident Mearnskirk Hospital, Newton Mearns) with duties at Mearnskirk Hospital and Victoria Infirmary, Glasgow.

Applications, with names of 3 referees, should be submitted to the Secretary, 24, St. Vincent-place, Glasgow, C.1.

GLOUCESTER. GLOUCESTERSHIRE ROYAL HOSPITAL, Southgate-street. (225 Beds.) Applications are invited for the post of CASUALTY OFFICER, vacant February. The department deals with majority of accidents from large area, offers favourable experience. Recognised for F.R.C.S. examination. Salary Senior House Officer or Junior Hospital Medical Officer grade, according to experience and qualifications.

Applications, naming 2 referees, to Secretary.

GRANTHAM AND KESTEVEN GENERAL HOSPITAL. (118 Beds.) RESIDENT HOUSE PHYSICIAN (Senior House Officer or pre-registration intern). General medical and paediatric. Post vacant 3rd February, 1956.

Applications, with full details and names of 2 referees, to Secretary, 101, Manthorpe-road, Grantham.

GREAT YARMOUTH AND GORLESTON GENERAL HOSPITAL, DENE SIDE, GREAT YARMOUTH. HOUSE SURGEON (Male or Female) required. The post is a pre-registration post at a salary of £425, £475, or £525 p.a. according to experience, less £125 p.a. for residence. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications and experience with names of 2 referees, to Hospital Secretary.

HALIFAX. ROYAL HALIFAX INFIRMARY. Senior HOUSE OFFICER in General Surgery required.

Applications to be forwarded to the Group Secretary, Royal Halifax Infirmary, Halifax.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) SENIOR HOUSE OFFICER (casualty and orthopaedic) required. Post vacant 3rd March, 1956. National scale of salary.

Apply to Hospital Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) 2 HOUSE SURGEONS required. Pre-registration posts vacant now and 5th February, 1956. National scale of salary.

Apply to Hospital Administrator.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. CASUALTY OFFICER (Junior Hospital Medical Officer) required.

Applications, stating 2 names for reference, should be sent to the Hospital Secretary.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. HOUSE SURGEON (pre-registration) required.

Applications, giving full details and 2 names for reference, should be sent to the Hospital Secretary.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general—first, second, or third post). To commence as soon as possible. Pre-registration post. Recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) RESIDENT CASUALTY OFFICER (Senior House Officer grade) with attachment to Paediatrician and Ophthalmic Consultant. Salary £745 p.a., less £130 p.a. residential emoluments. Recognised under F.R.C.S. regulations. Appointment to commence 1st February, 1956.

Apply, with full details and references, to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL, Hertford, Hertfordshire. Applications are invited from registered medical practitioners resident in or near Hertford for the appointment of PRACTITIONER OBSTETRIC CLINICAL ASSISTANT now available at Hertford County Hospital (Maternity Unit—22 Beds). The primary purpose of the appointment is to secure the services of a practitioner on an "on call" basis for emergency work and consultations when the Hospital's Consultant Obstetrician is not available. Applicants should possess an obstetric qualification or have had special obstetric experience. Remuneration will be made in accordance with the National Health Service terms and conditions of service of hospital medical staff (i.e., at the rate of £2 per emergency visit).

Applications, together with names of 2 referees, to the Secretary, Hertford Group Hospital Management Committee, Hertford County Hospital).

HORTON HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGION. PSYCHIATRIC REGISTRAR required. Previous psychiatric experience necessary. Single resident accommodation available. The Hospital deals with all types of psychiatric illness, experience may be gained in all modern physical occupational and psychotherapeutic methods. There is a special unit (Mott Clinic) for the treatment of neurosyphilis. Facilities afforded for attending courses of instruction in London for the D.P.M.

Application forms obtainable from the Secretary, Horton Hospital, Epsom, Surrey, to whom they should be returned, duly completed, not later than 4th February, 1956.

HOVE GENERAL HOSPITAL, Sussex. (75 Beds.) RESIDENT HOUSE SURGEON AND CASUALTY OFFICER required from 1st February, 1956. Post recognised for F.R.C.S., but not pre-registration.

Applications, stating age, qualifications, experience, and naming 2 referees, to the Administrative Officer as soon as possible.

HUDDERSFIELD ROYAL INFIRMARY. (312 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (Female) required to commence duty immediately. The post is recognised as a pre-registration appointment. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HULL. VICTORIA HOSPITAL FOR SICK CHILDREN, Park-street. HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. 2 HOUSE SURGEONS required for the above Hospital, 1 on 25th January and 1 on 8th February, 1956. Both posts are for a 6 monthly term and both are recognised for the D.C.H. qualification. Salaries according to national scale.

Send replies, with testimonials, to the Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of HOUSE SURGEON to the General Consulting Surgeon. The post is recognised for pre-registration and for the F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

IPSWICH AND EAST SUFFOLK HOSPITAL. Anglesea ROAD WING. (356 Beds.) Applications are invited for the post of SENIOR HOUSE SURGEON to the Fracture and Orthopaedic Department, vacant on 1st February, 1956. The post is graded Senior House Officer and is recognised for the F.R.C.S. examinations. The Department has 2 Consultants, about 60 beds and a large outpatient attendance ; it offers wide experience.

Applications, stating age, nationality and experience, together with copies of recent testimonials, to the Hospital Secretary.

ILFORD AND BARKING GROUP HOSPITAL MANAGEMENT COMMITTEE. There is a vacancy for a SENIOR HOUSE OFFICER ANÆSTHETIST at the King George Hospital, Ilford. The Officer appointed will be required to be available for duty in other hospitals in the Group. Salary will be at the rate of £745 p.a., less £145 p.a. emoluments.

Applicants should have been registered not less than 1 year, and should send applications, accompanied by copies of 3 testimonials, to the undersigned within 7 days of the appearance of this advertisement. H. F. HARRIS, Group Secretary.
King George Hospital, Ilford.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. REGISTRAR in Ophthalmology required for 1 year in the first instance from 1st February, 1956. Residence available if required. Terms and conditions of service of hospital medical staff apply.

Applications, stating age, qualifications, previous posts with dates, with 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 1, not later than 18th January 1956.

LEEDS. THE UNITED LEEDS HOSPITALS. The GENERAL INFIRMARY AT LEEDS. RESIDENT SURGICAL OFFICER of Registrar status required for 1 year in the first instance. Terms and conditions of service of hospital medical staff apply.

Applications, stating age, qualifications, previous posts with dates, with 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds, 1, not later than 18th January, 1956.

LEEDS. UNITED LEEDS HOSPITALS/LEEDS REGIONAL HOSPITAL BOARD. REGISTRAR in Neurology (2 similar posts) for duties divided between the Department of Neurology at the General Infirmary at Leeds (20 Beds) and Pinderfields General Hospital, Wakefield (38 Beds).

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 19th January, 1956.

KETTERING GENERAL HOSPITAL, Northamptonshire. CASUALTY OFFICER (Senior House Officer). Recognised for F.R.C.S. The post becomes vacant on 1st March, 1956. It offers wide experience of all traumatic conditions, including fractures and some orthopædic cases, with charge of 30 beds.

Applications, accompanied by testimonials, to be sent to the Secretary at the above address.

LEICESTER GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (obstetrics and gynæcology), vacant immediately. The post is recognised for the M.R.C.O.G. and D.Obst.R.C.O.G.

Applications, stating age, qualifications and experience, with copies of recent testimonials, to Group Secretary, No. 1 Hospital Management Committee, The Leicester Royal Infirmary, forthwith.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for the following House Officer appointments for the 6 months from 1st March to 31st August, 1956.

Royal Infirmary

HOUSE SURGEON to Gynæcological Department.
HOUSE SURGEON to Orthopædic Department.

Northern Hospital

HOUSE SURGEON.
HOUSE SURGEON to Orthopædic Department.

Southern Hospital

NIGHT CASUALTY OFFICER.

These posts are open to registered practitioners and pre-registration applicants.

Apply as soon as possible on form obtainable from the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1.

LLANELLY HOSPITAL, Llanelly, Carmarthenshire. (164 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in the Gynæcological Department, with duties in the E.N.T. and Ophthalmic Departments.

Full particulars, stating age, qualifications and experience, should be addressed to the Hospital Secretary.

LOUTH, LINCOLNSHIRE. COUNTY INFIRMARY. (215 Beds.) GRIMSBY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (medical), now vacant, at this busy general hospital.

Applications, with full details, together with names of 2 referees, should be addressed to the Hospital Secretary.

LOUTH COUNTY INFIRMARY. (215 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (orthopædics and casualty) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 23rd January, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. Applications are invited for the post of SENIOR HOUSE OFFICER for Accident Service including duties in the Hand Infection Unit. Vacant 1st February, 1956, and tenable for 1 year. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, and experience, together with copies of 3 recent testimonials, to be sent to the Secretary by 17th January, 1956.

MACCLESFIELD HOSPITAL. Applications invited SENIOR HOUSE OFFICER ANÆSTHETIST; vacant 15th February, 1956, resident or non-resident. Main duties Infirmary branch. Hospital recognised F.F.A.R.C.S. and D.A. purposes. Excellent facilities for study.

Apply immediately to Group Secretary, Macclesfield and District Hospital Management Committee, "Willerby House," Cumberland-street, Macclesfield.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON, 6 months appointment. Salary at the rate of £425, £475 to £525 according to experience. A deduction at the rate of £125 a year is made in respect of board and lodging and other services provided.

Applications should be forwarded as soon as possible to the Administrative Officer at the Hospital.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of SENIOR REGISTRAR. Whole-time post (non-resident). Tenable for 12 months, subject to renewal. Previous experience in ophthalmology essential. The terms and conditions of service for hospital medical and dental staffs will apply.

Applications to be made on forms obtainable from the undersigned as soon as possible.

F. J. CABLE, Secretary to the Board of Governors.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited from registered medical practitioners, Male or Female, for the post of HOUSE PHYSICIAN in the Neonatal Unit of Saint Mary's Hospitals (attached to the University Department of Child Health) for a period of 6 months, vacant on 24th March, 1956. Previous hospital experience essential and pædiatric experience desirable. Duties include the care of the newborn in the Maternity Department, the care of infants in the infants' ward and work in the clinics under the charge of the Department of Child Health. Salary in accordance with national scale.

Application, stating qualifications and experience, together with the names of 3 referees, should be sent to the undersigned not later than 27th January, 1956.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for 4 posts of HOUSE OFFICER in Gynæcology. Applicants must have had previous hospital experience in medicine and surgery. The posts are recognised for the purposes of the M.R.C.O.G. examination. The appointments are for 6 months, starting 1st April, 1956. Salary in accordance with national scale.

Application forms may be obtained from the undersigned and returned not later than 28th January, 1956.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of SENIOR HOUSE OFFICER in Obstetrics. Applicants must have had previous hospital experience in general medicine and surgery, and in obstetrics. The post is recognised for purposes of the M.R.C.O.G. examination. The duties involve clinical responsibility for mothers and babies, and supervision of the work of pre-registration House Officers is also included. The appointment is for 12 months from 1st April, 1956. National scale.

Application forms may be obtained from the undersigned and returned not later than 28th January, 1956.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for SENIOR HOUSE OFFICER post. Salary £745 p.a., less £155 p.a. for residential emoluments.

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL INFIRMARY, MANCHESTER, 13. REGISTRAR to the Department of Diagnostic Radiology, to commence as soon as possible. Whole-time, non-resident appointment for 12 months, renewable. Applicants must possess the D.M.R.D. or its equivalent.

Application to be made on form obtainable from the undersigned and to be returned not later than 25th January, 1956.

G. H. TAYLOR, Secretary.

MANCHESTER REGIONAL HOSPITAL BOARD invites applications for the post of REGISTRAR in Pathology. The duties will be with the Stockport and Buxton Hospital Management Committee and the successful candidate will work under the direction of the Consultant Group Pathologist.

Applications, stating age, experience, and qualifications, together with copies of 2 testimonials, to be addressed to the Group Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD. ResiDENT MEDICAL OFFICER (Registrar grade) post vacant at Birch Hill Hospital, Rochdale, 1st March, 1956.

Apply at once, with names and addresses of 2 referees, to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale.

MANCHESTER REGIONAL HOSPITAL BOARD. SALFORD HOSPITAL MANAGEMENT COMMITTEE. ROYAL MANCHESTER CHILDREN'S HOSPITAL, PENDLEBURY, near MANCHESTER. Applications invited for post of RESIDENT MEDICAL OFFICER (Registrar grade), vacant 19th March, 1956. Previous experience in pædiatrics essential and preference given to candidates with M.R.C.P. The Hospital is the chief teaching unit of the University Department of Child Health.

Applications to Group Secretary, Salford Royal Hospital, Chapel-street, Salford, 3, not later than 28th January, 1956.

MANCHESTER REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of REGISTRAR in Chest Diseases in the Ashton, Hyde and Glossop Group and Oldham and District Group of hospitals. The post offers wide experience in both outpatient clinics and pulmonary hospitals. Residential accommodation may be arranged.

Applications to the Group Secretary, Ashton, Hyde and Glossop Hospital Management Committee, Ashton-under-Lyne General Hospital, Ashton-under-Lyne, Lancashire.

MANCHESTER REGIONAL HOSPITAL BOARD invite applications for the post of RESIDENT REGISTRAR in the Board's Non-tuberculous Thoracic Surgery Unit of 58 Beds at Park Hospital, Davyhulme. 1 year appointment renewable. Post now vacant.

Application forms from Secretary, Park Hospital, Davyhulme.

MANCHESTER REGIONAL HOSPITAL BOARD. RegisTRAR in Pathology to the Bolton and District Group of hospitals with main duties in the Group Laboratories at the Bolton Royal Infirmary and the Bolton District General Hospital. Recognised for the Dip. Path.

Applications, stating age, nationality, qualifications, experience, and the names of 2 referees, should be sent immediately to Group Secretary, Bolton and District Hospital Management Committee, The Royal Infirmary, Bolton.

MANCHESTER. NORTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of REGISTRAR in the Department of Pathology. The Department serves 4 General Hospitals and offers excellent facilities in all branches of pathology. The post is recognised for the Diploma in Pathology.

Applications, with full details and names of 2 referees, by 23rd January, 1956, to Group Secretary, Crumpsall Hospital, Manchester, 8.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. MANCHESTER REGIONAL HOSPITAL BOARD. The Board invite applications from registered practitioners for the post of MEDICAL REGISTRAR.

Applications, stating age, qualifications, present post, experience and names of 2 referees, to be forwarded to the Group Secretary at the Hospital within 7 days of the appearance of this advertisement.

MANCHESTER. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. MANCHESTER REGIONAL HOSPITAL BOARD. The Board invite applications from registered practitioners for the post of RESIDENT SURGICAL OFFICER (Registrar grade). Candidates must hold the F.R.C.S.

Applications, with full details, to be forwarded to the Group Secretary, Withington Hospital, Manchester, 20, immediately.

MANCHESTER, S. CRUMPSALL HOSPITAL. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade). Tenable for 1 year and presents opportunities for gaining experience in all branches of clinical pathology. Previous experience in pathology not essential.

Applications, and names of 2 referees, by 23rd January, 1956, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MANCHESTER. CRUMPSALL HOSPITAL. Applications are invited for the resident post of REGISTRAR in Obstetrics and Gynæcology at the above Hospital. Recognised for M.R.C.O.G. This post offers extensive clinical experience.

Applications and names of 2 referees by 24th January, 1956, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MANCHESTER. ROYAL MANCHESTER CHILDREN'S HOSPITAL. Applications invited for resident appointment of HOUSE PHYSICIAN (Professorial Unit, University Department of Child Health), House Officer status, vacant 1st February, 1956. The appointment is for a period of 6 months and is open to pre-registration graduates.

Applications to Hospital Secretary not later than 24th January, 1956.

MARGATE. GENERAL HOSPITAL. (132 Beds.) House SURGEON. Approved pre-registration post. Salary at the rate of £425–£525 p.a., according to experience, less £125 for residential emoluments.

Applications, with copies of testimonials, to Hospital Secretary.

MITCHAM JUNCTION, SURREY. WANDLE VALLEY HOSPITAL. RESIDENT MEDICAL OFFICER (Senior House Officer grade), vacant now. The Hospital contains 140 Beds for infectious diseases and geriatric cases.

Applications, stating age, qualifications, and experience, with the names of referees, should be sent to the Group Secretary, St. Helier Hospital, Carshalton, Surrey.

NEWCASTLE REGIONAL HOSPITAL BOARD. NEW-CASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. (Main hospitals: Newcastle Eye Hospital (34 Beds); Walker Annexe (21 Beds); Newcastle General Hospital (Outpatient Department).) REGISTRAR OPHTHALMOLOGIST (whole-time) resident, single accommodation available.

Applications, with names and addresses of 3 referees, to be forwarded to Senior Administrative Medical Officer, Newcastle Regional Hospital Board, Walker Gate Hospital, Benfield-road, Newcastle upon Tyne, 6, within 21 days.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the whole-time, non-resident appointment of SENIOR MEDICAL REGISTRAR, tenable in the first year at the Royal Victoria Infirmary. The appointment is for 1 year in the first instance, and may be renewed to a maximum of 4 years. The appointment will be subject to terms and conditions of service of hospital medical staff in the National Health Service. In any reappointment the successful candidate may be required to undertake duty in a hospital under the Newcastle Regional Hospital Board.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON to the Radiotherapy and E.N.T. Departments. This post is recognised as a pre-registration appointment.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, by 18th January, 1956.

NOTTINGHAM. CITY HOSPITAL. (804 Beds.) Applications are invited for the post of HOUSE SURGEON, vacant 1st March, 1956. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Resident HOUSE SURGEON (pre-registration—first or second post) required about 6th February for 6 months.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Resident HOUSE PHYSICIAN (pre-registration first or second post), required 11th February for 6 months.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to the Group Secretary.

NOTTINGHAM CHILDREN'S HOSPITAL. (136 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT SURGICAL REGISTRAR required. Duties will include work in the Casualty Department. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 23rd January, 1956, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

OXFORD REGIONAL HOSPITAL BOARD. Registrar (whole-time, resident) in E.N.T. Surgery to the hospitals of the Northampton/Kettering area, mainly at Northampton General Hospital. Vacant now. For 1 year, eligible for extension to 2 years. Recognised for the F.R.C.S.

Applications on forms obtainable from Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 31st January, 1956.

PETERBOROUGH. THE MEMORIAL HOSPITAL. PETERBOROUGH AND STAMFORD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (orthopædic). Applications are invited for this position, vacant now. Exceptional experience offered in busy department.

Apply to the Secretary, Memorial Hospital, Peterborough.

PLYMOUTH. SCOTT ISOLATION HOSPITAL. House PHYSICIAN (resident, Male), post vacant 1st February, 1956. Recognised pre-registration post which offers excellent experience.

Applications should be sent to the Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth, Devon, immediately.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL. DEPARTMENT OF OBSTETRICS AND GYNÆCOLOGY. Applications invited from duly qualified and registered medical practitioners for the appointment of SENIOR HOUSE OFFICER in Obstetrics and Gynæcology, vacant 1st April, 1956. There will be additional duties at the Flete Maternity Home, and the Alexandra Maternity Home, which are parts of the Department. Candidates should have had previous experience in a department of obstetrics and gynæcology. The appointment will be for a period of 12 months. Salary £745 p.a. Terms and conditions of service are in accordance with the National Health Service terms. The post is recognised by the Royal College of Obstetricians and Gynæcologists for the Membership examination of the College.

Applications, stating age, nationality, qualifications, and experience, together with the names and addresses of 3 referees, should be sent to—

ARTHUR R. CASH, Group Secretary, Plymouth,
South Devon and East Cornwall General Hospital Group.
7, Nelson-gardens, Stoke, Plymouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Saint Mary's Hospital (130 surgical beds)
HOUSE SURGEONS (pre-registration), vacant 25th January, 26th January, 30th January.

Saint Mary's Hospital (74 acute medical beds)
HOUSE PHYSICIANS (pre-registration), vacant 31st January, 2nd February, 24th February.

St. Mary's Hospital (53 pædiatric beds)
HOUSE PHYSICIAN, vacant 15th February.

Queen Alexandra Hospital (78 acute medical beds)
HOUSE PHYSICIAN (pre-registration) vacant 1st February, 1956.

Royal Portsmouth Hospital (Orthopædic Department —104 Beds)
HOUSE OFFICER (pre-registration), vacant 16th January.

Royal Portsmouth Hospital (70 surgical beds)
HOUSE SURGEON (pre-registration), vacant 1st February.

Applications, stating age, experience, and qualifications, together with names of 2 referees, should be forwarded as soon as possible to L. C. ROGERS.
35, Grove-road South, Southsea.

PORTSMOUTH. ST. JAMES HOSPITAL FOR MENTAL AND NERVOUS DISEASE (GROUP 49). SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. DEPARTMENT OF CHILD PSYCHIATRY. Applications are invited for the appointment of a SENIOR PSYCHIATRIC REGISTRAR who will be required to undertake work in other departments of the Hospital, but whose main duties will be in the above department. The Hospital offers excellent experience in the diagnosis and treatment of all forms of mental illness, including cases of delinquency, and there is a separate Neurology Department. Candidates must possess the D.P.M. and may visit the Hospital by appointment with the Physician-Superintendent. A furnished flat is available in the Hospital.

Application forms may be obtained from the Group Secretary: 5 copies of the form, duly completed, should be returned to him within 3 weeks of the publication of this advertisement.

PORTSMOUTH. ST. JAMES HOSPITAL FOR MENTAL AND NERVOUS DISEASE (GROUP 49). SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of Full-time PSYCHIATRIC REGISTRAR. The Hospital is approved as a psychiatric teaching hospital and offers excellent experience in the treatment of the neuroses, psycho-neuroses, the maladjusted child and the problem of delinquency. The Neurological Department of the Hospital is also recognised by the examining bodies and arrangements are made to enable junior medical staff to fulfil the D.P.M. regulations regarding mental deficiency. Ministry of Health terms and conditions apply. Intending candidates may visit the Hospital by appointment with the Physician-Superintendent.

Application forms may be obtained from the Group Secretary: 5 copies of the form, duly completed, should be returned to him within 3 weeks of the publication of this advertisement.

PORTH AND DISTRICT HOSPITAL, Porth, Rhondda. (110 Beds—visited regularly by Consultants from Cardiff Royal Infirmary.) PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (surgical). Married quarters available. Maximum tenure of appointment 3 years but holder may apply for reappointment.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent as soon as possible to the Group Secretary, Courthouse-street, Pontypridd.

READING. ROYAL BERKSHIRE HOSPITAL. (401 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the resident post of HOUSE SURGEON (gynæcology) vacant 1st February, 1956, and tenable for 6 months.

Write, stating age, qualifications with dates, nationality, and present post, with copy of 1 recent testimonial, to Secretary.

RHYL. ROYAL ALEXANDRA HOSPITAL. (139 Beds.) Applications are invited for the appointment of CASUALTY OFFICER (Senior House Officer grade) at the above Hospital. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, accompanied by copies of 2 recent testimonials, should be sent forthwith to the Group Secretary, Clwyd and Deeside Hospital Management Committee, "Rhianfa," Russell-road, Rhyl.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) SENIOR HOUSE OFFICER (resident) required from 6th February, 1956, for duties in the Casualty and Admissions Department. This is a large General Hospital with specialised departments dealing with all types of acute medical and surgical cases. The post affords good opportunity for gaining tuition and experience.

Applications should be forwarded immediately to the Group Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford.

SALFORD. HOPE HOSPITAL. Salford Hospital Management Committee. Applications are invited for the posts of 3 HOUSE SURGEONS (general—pre- or post-registration), which become vacant on 27th January, 1956.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, should be forwarded to the Hospital Secretary immediately.

SALISBURY GENERAL HOSPITAL. Applications are invited for the post of Locum ORTHOPÆDIC REGISTRAR from 6th February to 11th May, 1956. Accommodation available if required. Salary £17 10s. per week.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time post of REGISTRAR in Dermatology (limited amount of V.D. work involved). The post is non-resident and the main duties are at the Royal Northern Infirmary and Raigmore Hospital, Inverness. Previous experience in dermatology essential.

Forms of application and further particulars of the post are obtainable from the undersigned, to whom applications should be submitted by 25th January, 1956.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Raigmore, Inverness.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Radiotherapy at the Royal Infirmary and the Western General Hospital, Edinburgh.

Applications, giving particulars of age, qualifications and previous experience, together with the names of 2 referees, should be submitted to the Secretary, South-Eastern Regional Hospital Board, 11, Drumsheugh-gardens, Edinburgh, by 4th February, 1956.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of SENIOR REGISTRAR in Surgery based at Stobhill Hospital with duties at the Royal Hospital for Sick Children, Glasgow, which will be for 1 year in the first instance. This appointment is subject to the National Health Service (Scotland) superannuation regulations.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, by 21st January, 1956.

SCOTLAND. EASTERN REGIONAL HOSPITAL BOARD. Anæsthetics. DUNDEE TEACHING HOSPITALS. Applications are invited for a post as SENIOR REGISTRAR in Anæsthetics at the Dundee Teaching Hospitals—Dundee Royal Infirmary (510 Beds) and Maryfield Hospital (360 Beds), the main general teaching hospitals associated with the University of St. Andrews. Salary and conditions of service in accordance with national agreement.

Forms of application and further particulars from the Secretary to the Board, "Braeknowe," 430, Blackness-road, Dundee, with whom applications must be lodged not later than 21st January, 1956.

SHEFFIELD, 6. MIDDLEWOOD HOSPITAL. (2000 Beds.) SHEFFIELD NO. 2 HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from Male or Female officers for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER at Middlewood Mental Hospital. Living quarters and residential services are available for single officers. There are good facilities for postgraduate study for the D.P.M. and there is full collaboration with the general hospital situate in the same grounds. Excellent laboratory and other special departments. Extensive psychiatric outpatient service.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, should be forwarded immediately to the Medical Superintendent.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS/ SHEFFIELD REGIONAL HOSPITAL BOARD. REGISTRAR required at the Sheffield Centre for the Investigation and Treatment of Rheumatic Diseases. Duties to include clinical research.

Applications, with the names of 3 referees, should be sent not later than 30th January, 1956, to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS.

Royal Hospital Unit

NON-RESIDENT SENIOR REGISTRAR in Orthopædics required at the above Hospital. Fellowship of 1 of the Royal Colleges of Surgeons essential.

Closing date for applications 20th January, 1956.

REGISTRAR required for the Department of Neurology. Post vacant 11th April, 1956.

Closing date for applications 24th January, 1956.

Jessop Hospital for Women Unit

RESIDENT REGISTRAR or SENIOR HOUSE OFFICER required in the Pædiatric Department of the above Hospital Post vacant 1st February, 1956. Grade according to qualifications and experience. The post is associated with the Department of Child Health in the University of Sheffield and it is possible that there may be an interchange with the Registrar at the Children's Hospital. The successful candidate may be required to attend 1 outpatient session per week at the Children's Hospital.

Applications to be sent immediately.

NON-RESIDENT REGISTRAR or SENIOR HOUSE OFFICER in Clinical Pathology required. Grade according to qualifications and experience. Post vacant 1st April, 1956.

Applications to be sent immediately.

Applications for the above posts should give the names of 3 referees and be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1.

SHEFFIELD. NETHER EDGE HOSPITAL. Applications are invited for the resident post of SENIOR HOUSE OFFICER. Main duties will be in connection with the Maternity Unit but will also be required to assist in the wards for long-stay medical cases. Small flat available on rental.

Applications, giving full details of age, qualifications, present and previous appointments with dates, and the names of 2 persons to whom reference may be made, should be forwarded to W. STANSFIELD, at Nether Edge Hospital, Sheffield, 11.

SHREWSBURY. ROYAL SALOP INFIRMARY. Orthopædic/Accident HOUSE SURGEON (Senior House Officer). Successful applicant will be allowed to attend for 2 days a month at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry, for postgraduate study, with the Consultant. Post recognised under revised Fellowship regulations in respect of 6 months training required for the Final Fellowship examination.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for a whole-time appointment as RESIDENT SURGICAL OFFICER to fill a vacancy in the approved establishment at the Dartford Group of hospitals. Duties will be mainly at Joyce Green Hospital, Dartford, and also at West Hill Hospital, Dartford, Kent. The salary will be £965 p.a. and the appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance, renewable for a further year.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 28th January, 1956.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General Surgery to fill a vacancy in the approved trainee establishment at the Canterbury and Isle of Thanet Groups of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 28th January, 1956.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in General Medicine to fill a vacancy in the approved trainee establishment at the Orpington and Sevenoaks Group of hospitals, as from 1st April, 1956. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staffs (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications, and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, London, W.1, not later than 28th January, 1956.

SOUTH EAST NORTHUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. RESIDENT MEDICAL OFFICER (Tuberculosis Service) required for duties at the Moor Park and Hadrian Hospitals. Junior Hospital Medical Officer or Senior House Officer grade, according to experience.

Applications, with names of 2 referees, to Group Secretary, Preston Hospital, North Shields.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) CASUALTY OFFICER/SENIOR HOUSE OFFICER (orthopædic) required for the above Hospital (Orthopædic Unit 74 Beds) in February. This Hospital is the centre to which all trauma from a large industrial town and port is directed, thus providing excellent experience in the treatment of traumatic conditions.

Applications, with copies of testimonials, to be submitted as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds.) ORTHOPÆDIC HOUSE SURGEON required. Post recognised for Pre-registration Service and tenable for 6 months. The Hospital is the centre to which all trauma from a large industrial town and port is directed thus providing excellent experience in the treatment of traumatic conditions; patients with orthopædic conditions are also drawn from a wide area.

Applications, with copies of testimonials, should be sent as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (278 Beds. Recognised for F.R.C.S.) RESIDENT HOUSE SURGEON required immediately. Pre-registration candidates eligible.

Applications, with copies of testimonials, should be forwarded to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTH-WESTERN REGIONAL HOSPITAL BOARD. Applications are invited from Registered Medical Practitioners in general practice to undertake 4 weekly sessions in Anæsthetics at Paignton and District Hospital. The 4 sessions available may be allocated between not more than two of the applicants. Previous experience in anæsthetics is essential. Payment will be at the rate of £175 p.a. per weekly 3½-hour session.

Applications, stating date of birth, qualifications, and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8, not later than 4th February, 1956.

SOUTHEND GENERAL HOSPITAL. Locum Surgical REGISTRAR (resident) required for the period 17th February–11th March, 1956, inclusive.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, should be sent to the undersigned not later than 24th January, 1956.

J. C. FIELD, Secretary.

STARCROSS, DEVON. ROYAL WESTERN COUNTIES INSTITUTION HOSPITAL GROUP. Applications are invited for the appointment of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER (Male or Female), preferably with some knowledge of mental deficiency.

Applications, with full details of age, qualifications, and experience, together with names of 2 referees, should be submitted to the Medical Superintendent, Royal Western Counties Institution, Starcross, Devon.

ST. ALBANS CITY HOSPITAL. (384 Beds.) North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. MEDICAL REGISTRAR (non-resident) required for 1 of 2 acute medical teams at above Hospital. Post suitable M.R.C.P. training. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, by 30th January, 1956.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) HOUSE SURGEON (House Officer grade) required for general surgical team. Recognised for F.R.C.S. Post tenable for 6 months. Preference given to pre-registration candidates seeking post under the Medical Act, 1950.

Applications to Secretary, Mid-Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

STIRLING AND CLACKMANNAN HOSPITALS BOARD OF MANAGEMENT. JUNIOR HOSPITAL MEDICAL OFFICER required for both hospital and outpatient duties in Area Chest Service. Successful applicant will be based on Stirling Royal Infirmary and will work under the direction of the Area Chest Physician.

Further particulars can be obtained from the Group Medical Superintendent, Stirling Royal Infirmary, to whom applications, giving 3 names for reference, should be sent.

SWANSEA. MOUNT PLEASANT HOSPITAL. (238 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Registered medical practitioners are invited to apply for the resident appointment of JUNIOR HOSPITAL MEDICAL OFFICER for work in the Medical and Surgical Departments and in the chronic sick wards of the above Hospital.

Applications, stating age, experience and qualifications with copies of 2 recent testimonials, should be addressed to the Hospital Secretary.

STOCKTON-ON-TEES. SEDGEFIELD GENERAL HOSPITAL. (336 Beds.) SEDGEFIELD HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (general surgery) required immediately. Post recognised in connection with F.R.C.S. examinations. Adequate staff employed. Excellent opportunities for study. Accommodation available for married couple, if desired. Further particulars gladly furnished on request.

Applications to the undersigned as soon as possible.

L. WATSON, Group Secretary.

STOCKTON-ON-TEES. SEDGEFIELD GENERAL HOSPITAL. (336 Beds.) SEDGEFIELD HOSPITAL MANAGEMENT COMMITTEE. Pre-registration HOUSE PHYSICIAN required; immediate vacancy. Adequate staff employed. Excellent conditions.

Apply to the undersigned as soon as possible.

L. WATSON, Group Secretary.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. GYNÆCOLOGY DEPARTMENT. SENIOR HOUSE OFFICER required. Post vacant very shortly. Recognised for M.R.C.O.G. (surgery). Experience in abnormal obstetrics available, but the work is mainly gynæcological.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (general surgery) required. Post vacant early February. Pre-registration post. Hospital recognised for F.R.C.S.

Detailed applications, with copy testimonials, to Group Secretary. Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. Whole-time Locum Tenens SENIOR REGISTRAR in Ophthalmology. Remuneration £24 weekly. Vacant approximately 10 weeks from 13th February.

Apply Senior Administrative Medical Officer, Regional Hospital Board, details of experience, naming 3 referees, 10, Augustus-road, Birmingham, 15, immediately.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (general medicine with dermatology) required. Post vacant 31st January—pre-registration.

Detailed applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE OFFICER (surgery) required. Post vacant 22nd January, 1956. Recognised pre-registration. Hospital recognised for F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Hospital Management Committee, Princes-road, Stoke-on-Trent, as soon as possible.

SUTTON AND CHEAM HOSPITAL, Cotswold-road, SUTTON, SURREY. (146 Beds.) HOUSE SURGEON (post available to pre-registration or fully registered candidates), vacant now. Recognised for F.R.C.S.

Applications, giving age, qualifications, &c., with copies of testimonials, to the Secretary.

SULLY HOSPITAL, Sully, Penarth, Glamorganshire. THORACIC CENTRE. (324 Beds.) SENIOR HOUSE OFFICER (medical) required to commence 5th March, 1956. Experience available in investigation and treatment of all lung and heart diseases in adults and children.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (gynæcology—25 Beds, and obstetrics—40 Beds). The appointment, which is vacant from 1st February, 1956, is for a period of 12 months. The post is recognised for the M.R.C.O.G. Previous experience in gynæcology and obstetrics is desirable.

Applications, stating age, qualifications, nationality and experience, together with the names of 2 referees, should be forwarded immediately to the Group Secretary, Taunton Hospital Management Committee, Taunton and Somerset Hospital, Musgrove Park Branch, Taunton.

TREDEGAR GENERAL HOSPITAL. (20 miles from Newport, Mon, and 24 from Teaching Hospital at Cardiff; 6 miles from the Vale of Usk.) RHYMNEY AND SIRHOWY VALLEYS HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required at above Hospital. Surgical Unit of 50 Beds with also 6 orthopædic beds under daily supervision of Consultant Surgeons and visiting supervision of Orthopædic Surgeon. Busy Outpatient Casualty and Radiology Departments. Married quarters available. Pre-registration, if suitable candidate available.

Apply, with full particulars, to Group Secretary, Hospital Management Committee, Central Offices, Caerphilly-road, Ystrad Mynach, Hengoed, Glam, by 20th January.

VIRGINIA WATER, SURREY. HOLLOWAY SANA-TORIUM. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the whole-time appointments of PSYCHIATRIC REGISTRARS (2). Full facilities are available for training. 1 unfurnished flat is available for a married man.

Application forms are obtainable from the Group Secretary and should be returned within 14 days of the date of this advertisement. Inspection of the Hospital is invited by direct arrangement with the Physician-Superintendent.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Applications invited for position of SENIOR HOUSE OFFICER in the Thoracic Surgery Department. Salary £745 p.a. A charge of £155 p.a. is made for accommodation.

Address written applications, giving full personal particulars and details of experience, &c., together with 2 names and addresses for reference, to W. BOWRING, Group Secretary.

Victoria Chambers, Wood-street, Wakefield.

WARRINGTON GENERAL HOSPITAL. (368 Beds.) Applications are invited for the post of HOUSE SURGEON (Male or Female) recognised for pre-registration, at the above Hospital which will shortly become vacant. Salary will be £425–£525 p.a., less a deduction of £125 for full residential emoluments. The staffing of the Surgical Unit consists of a Senior Registrar, Registrar, and 2 House Surgeons. The post offers a comprehensive training in surgery.

Apply, giving full particulars, to—

H. L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.

WELLS, SOMERSET. MENDIP HOSPITAL. Applications are invited for the appointment of RESIDENT JUNIOR HOSPITAL MEDICAL OFFICER to the above Mental Hospital. Salary and conditions of service in accordance with the Whitley Council terms for hospital medical staff. Single furnished quarters will be available, subject to appropriate deductions. Facilities are available for studying for the D.P.M.

Applications, giving particulars and names and addresses of 2 referees, to be addressed to the Physician-Superintendent, Mendip Hospital, Wells, Somerset.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (198 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. This is a pre-registration post and is recognised for F.R.C.S. Salary according to the National Health Service scale.

Applications, with copies of recent testimonials, to the Administrator.

WATFORD. GROUP 9 PATHOLOGICAL LABORATORY. NON-RESIDENT PATHOLOGIST (Senior House Officer grade) required. The appointment is tenable for 1 year, in the first instance. Salary and conditions according to National Health Service regulations.

Applications to Consultant Morbid Anatomist, Group 9, Laboratory, 6, Rickmansworth-road, Watford, Herts.

WEAVERHAM, CHESHIRE. HEFFERSTON GRANGE SANATORIUM. (162 Beds.) RESIDENT SENIOR HOUSE OFFICER required. Salary £745 p.a., less £125 residential emoluments. Ministry of Health terms and conditions. Post offers experience in all forms of treatment of acute pulmonary tuberculosis.

Applications to the Secretary at the above address, with names of 2 referees, as soon as possible.

WELSH REGIONAL HOSPITAL BOARD. Registrar in Thoracic Medicine, Sully Hospital, Sully, near Penarth, Glam (324 Beds). Regional Centre for Pulmonary Tuberculosis and all other chest and heart conditions. Resident or non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR in Orthopædic Surgery, based at Caernarvon and Anglesey General Hospital, Bangor, to work at Eryri Hospital, Caernarvon and other hospitals in Group. Non-resident.

REGISTRAR (E.N.T. surgery), Caernarvon and Anglesey General Hospital, Bangor. Non-resident.

REGISTRAR (general medicine), Bridgend General Hospital, Bridgend (381 Beds). Hospital recognised for major diplomas. Resident non-resident.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD. Senior Registrar in Ophthalmology, Glantawe Hospital Management Committee. Based at Swansea Hospital (403 Beds). Hospital recognised for F.R.C.S. and D.O. Non-resident. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD. Registrar in Orthopædic Surgery based at Rhyl, to serve Clwyd and Deeside Hospital Management Committee. Also required to assist in treatment of long-stay orthopædic cases at area sanatoria. Subject to review end of first year.

Forms of application from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WHITEHAVEN HOSPITAL, Cumberland. (124 Beds, plus 27 Beds in Annexe.) HOUSE SURGEON, with orthopædic and casualty duties. Recognised pre-registration, Senior House Officer grade if appropriate. Vacant 1st February. Furnished married quarters may be available.

Detailed applications, with dates, and names of 2 referees, to Group Secretary, Workington Infirmary, Cumberland.

WINCHESTER. ROYAL HAMPSHIRE COUNTY HOSPITAL. (315 Beds.) HOUSE SURGEON (post recognised by Royal College of Surgeons) required for general surgery with some E.N.T. duties. Approved pre-registration post. Vacant 9th February.

Applications, with copies of 2 testimonials, to the Secretary.

WOLVERHAMPTON. THE ROYAL HOSPITAL (an Associated Hospital of the University of Birmingham Medical School). 2 HOUSE OFFICERS (general surgery). 1 vacant mid-January, 1 vacant 1st February. Pre-registration posts.

Apply Secretary, with copies of testimonials.

WORKINGTON INFIRMARY, Cumberland. (118 Beds. Pre-registration post, recognised F.R.C.S.(Ed.).) HOUSE SURGEON (first, second, or Senior House Officer post), vacant 1st February.

Detailed applications, with dates, and names of 2 referees, to Secretary.

WORKINGTON INFIRMARY, Cumberland. (118 Beds. Pre-registration post.) HOUSE PHYSICIAN (first, second or Senior House Officer post), vacant now.

Detailed applications, with dates, and names of 2 referees, to Group Secretary.

WORTHING HOSPITAL, Lyndhurst-road, Worthing, SUSSEX. Applications are invited from registered medical practitioners for the appointment of RESIDENT CASUALTY OFFICER (Senior House Officer grade), vacant February, 1956. The post is recognised for the revised Fellowship regulations in respect of the 6 months training required by candidates for the Final Fellowship examination.

Applications, stating age, qualifications, nationality and experience, together with copies of 2 recent testimonials, to be forwarded to the Hospital Secretary, as soon as possible.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. REGISTRAR in Psychiatry (resident or non-resident) to assist Consultant Psychiatrist. Main centre—Billinge Hospital. Active Psychiatric Unit. Modern treatment. Over 300 admissions annually. Post recognised for D.P.M. Good training facilities.

Applications, with names of 2 referees, to Secretary, Knowsley House, Wigan.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. (200 Beds.) SENIOR HOUSE OFFICER in Orthopædic Surgery. Post vacant 22nd January, 1956.

Applications to Secretary, Wigan Infirmary.

WREXHAM. MAELOR GENERAL HOSPITAL. Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence duties on 1st February, 1956. The appointment is recognised for the Diploma of F.R.C.S. (Eng. and Edin.) and is a pre-registration post.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

YORK. MATERNITY AND FULFORD HOSPITALS. SENIOR HOUSE OFFICER in Obstetrics and Gynæcology, required 1st February, 1956. Recognised for M.R.C.O.G.

Applications, stating age, qualifications, experience, nationality, and names of 2 referees, to Group Secretary, York A and Tadcaster Hospital Management Committee, Bootham Park, York.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for the following whole-time posts as REGISTRAR :—

(i) in Obstetrics and Gynæcology at the Samaritan Hospital, Belfast.

(ii) in General Surgery at hospitals managed by the Banbridge and Dromore Hospital Management Committee.

The terms and conditions will be in accordance with the application of the Spens report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be returned not later than 28th January, 1956.

IBADAN, NIGERIA. UNIVERSITY COLLEGE HOSPITAL. The Board of Management invites applications for the appointment of REGISTRAR (surgery). Candidates must be fully registered medical practitioners. For part of the time, the Registrar will be required to work on the traumatic side which will include supervision of the Casualty Department.

Salary : 1st Tour—£1164 p.a.
2nd Tour—£1212 p.a., plus inducement addition of £270 p.a.

Gratuity : On satisfactory completion of agreement, a gratuity of £37 10s. will be paid for each completed period of 3 months service.

Duration of appointment : 1 tour of 12 months in the first instance renewable by mutual agreement for a further tour of 12 months.

Outfit allowance : £60 payable on first appointment.

Quarters : Partly furnished quarters are provided at a rental of 8½% of salary, excluding inducement addition.

Leave : Expatriate Officers will be eligible for 7 days leave on full pay for each completed month of resident service in Nigeria.

Passages : Free first-class passages to and from Nigeria are provided for expatriate officers and their wives. Free first-class passages to Nigeria will, under certain circumstances, be provided for non-expatriate Officers and their wives.

Children's allowances : Officers will be eligible for children's allowances.

Arrangements can be made to enable expatriate Officers to continue their National Health Service superannuation scheme contributions.

Applications should be submitted not later than 30th January, 1956, on the appropriate form which can be obtained with further particulars, on receipt of an addressed foolscap envelope, from the Adviser on Staff Recruitment, London Office, University College Hospital, Ibadan, 57, Catherine-place, Palace-street, London, S.W.1.

U.S.A. CAMBRIDGE, MASSACHUSETTS. Applications are invited for the positions of approved RESIDENCIES in Anesthesia for a 2-year period beginning 1st July, and 1st September, 1956. Salary $1800 first year and $3600 second year, and full maintenance. Training in all branches of anesthesia. There is affiliation with other hospitals. Opportunity to attend various meetings in anesthesiology throughout the New England Area.

Applications, stating age, nationality, qualifications, and experience, together with the names of their referees, should be forwarded to the Director of Anesthesiology, P.O. Box 39, Cambridge 38, Massachusetts. Travelling expenses to and from the U.S.A. will be paid, but particulars will be sent as soon as application is received. Please enclose recent photograph with application.

Public Appointments

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of applications*
BLAENAVON ..	MONMOUTH ..	4TH FEBRUARY, 1956

NATIONAL COAL BOARD. North-Eastern Division. Applications are invited for the post of ASSISTANT AREA MEDICAL OFFICER in No. 2 (Doncaster) Area. Candidates should preferably be aged about 30 years and have experience in the field of preventive and industrial medicine and a knowledge of the Coal Mining Industry would be an advantage. The work will include making underground visits at collieries. Salary according to qualifications and experience will be within the range of £1100–£1600 p.a. Candidates with a fair amount of postgraduate experience will not be paid less than £1200.

Detailed applications, giving the names of 2 referees, should be sent to the Staff Director, National Coal Board, North-Eastern Division, Ranmoor Hall, Belgrave-road, Sheffield, 10, to arrive not later than 4th February, 1956.

NORTHAMPTONSHIRE COUNTY COUNCIL. Applications are invited for the whole-time appointment of ASSISTANT MEDICAL OFFICER for Maternity and Child Welfare and School Medical Inspection on the salary scale of £975–£50–£1375 p.a. Travelling and subsistence allowances will be paid on the scale from time to time approved by the Council. Candidates should possess special knowledge of, and experience in, maternity and child welfare work and preference will be given to those who hold the Diploma in Child Health and have been approved by the Minister of Education for the examination and ascertainment of educationally subnormal pupils. The Officer appointed will work under the direction of the County Medical Officer of Health and will be required to reside in or near Kettering. The appointment will be subject to the Local Government superannuation acts and will be determinable by 3 months notice on either side.

Applications, stating age, qualifications and experience, with the names of 2 referees, should reach the undersigned not later than 11th February, 1956.

J. ALAN TURNER, Clerk of the County Council.

County Hall, Northampton, 6th January, 1956.

HER MAJESTY'S OVERSEA SERVICE. Sierra Leone. MEDICAL OFFICERS are urgently required for general duties including hospital and district work in order to maintain existing standards of service to the public and to make possible much needed expansion. The appointments offer scope for the practice of many branches of medicine and surgery and carry a considerable measure of independence and personal responsibility. Arrangements exist for allowing private practice at the discretion of the Director of Medical Services. Candidates must possess medical qualifications registrable in the United Kingdom and have had at least 12 months postgraduate hospital experience.

There is a permanent career for doctors entering the Oversea Service in Sierra Leone Service, but short-term contracts are available. Alternative methods of entry are as follows :—

(*a*) On 3 years probation for permanent and pensionable employment with retiring age of between 45 and 55. Pensions (which are non-contributing) are at the rate of 1/600th of the final pensionable emoluments for each completed month of reckonable services.

(*b*) From the National Health Service. Candidates may leave the Service but retain their superannuation rights up to 6 years and receive a gratuity (taxable) of 20% of the aggregate of their salary.

Salaries, including pensionable expatriation pay, for Officers under (*a*) and (*b*) range from £1098 to £1956 a year, or

(*c*) On short-term contract (2 tours of 18–24 months duration each) with inclusive salaries from £1185 to £2117 a year. On completion of contract a gratuity (taxable) is paid at the rate of £37 10s. for each completed period of 3 months service (including leave).

Starting salaries are determined according to age, qualifications and experience. Opportunities exist for transfer and promotion to posts elsewhere in Her Majesty's Oversea Service outside Sierra Leone. Quarters are normally available at low rental. Permission is required for wife to accompany an Officer if he is appointed on permanent and pensionable terms at an inclusive salary of less than £1350 a year, or £1512 a year when serving on contract, but permission is not required if wife is to follow husband after he has been resident in Sierra Leone for 3 months or more.

Officers selected may be granted either (but not both) of the following concessions in any one tour of service :—

(i) One return sea passage for each of 2 children under 19 years of age ; or

(ii) An allowance of £75 a year for each of 2 children maintained outside of Sierra Leone for the whole of the tour.

Income-tax at local rates. Local leave is permissible and generous home leave is granted after each tour of 18–24 months duration. The short tours of service enable frequent visits to be made to children being educated at home. Many officers have their children with them until they reach school age.

Application forms from the Director of Recruitment, Colonial Office, Sanctuary Buildings, Great Smith-street, London, S.W.1 (quoting reference No. BCD.117/15/02).

PRISON COMMISSION. Applications are invited from registered medical practitioners for the appointment of Full-time MEDICAL OFFICER (Men and Women). The Prison Commissioners are responsible for prisons, Borstal Institutions and Detention Centres in England and Wales and there are vacancies for Medical Officers in London and the provinces. Full-time Medical Officers are employed in the larger establishments where there are usually 1 or more doctors working with a Senior Medical Officer. The work varies a little between one establishment and another, according to the classification of the prisoners. It includes the general medical care of prisoners and inmates, making psychiatric assessments on them, and the provision of medical and psychiatric reports to the Commissioners and to the Courts. It is desirable that candidates should have had experience in psychological medicine but the possession of the D.P.M., while a recommendation, is not essential. Surgical and psychotherapeutic units employing part-time specialists are established at selected Centres and use is made, in particular cases, of the facilities available in National Health Service hospitals for consultations and special investigations. Candidates must be over 28 years of age. Salary £1500–£75–£1800–£100–£2100 (minimum linked to age 35, minus £50 for each year below that age and plus 1 increment for each year above that age but not exceeding 40). Rates are subject to deduction for posts outside London. In addition there is a pay supplement of £95 or £100 according to salary. Appointments are unestablished in first instance but opportunity for establishment through Civil Service Commission later. Unfurnished quarters are sometimes available at a moderate rental.

Application forms and regulations from B.Y.1114, London Appointments Officer, Ministry of Labour and National Service, 1–6, Tavistock-square, London, W.C.1. Returnable by 28th January, 1956. No original testimonials should be forwarded.

LAGOS TOWN COUNCIL, Nigeria. Assistant Maternity AND CHILD WELFARE OFFICER required. Salary £804 rising to £1650 plus £100 a year staff pay and inducement allowance of £240 rising to £300 a year. Point of entry depends on the applicant's qualifications and experience. Free passages for Officer and wife. Assistance towards cost of children's passages and grant up to £150 annually for their maintenance in the United Kingdom. Liberal leave on full salary after each tour of 12/24 months duration. Outfit allowance up to £60 in certain cases. Preference will be given to candidates with post-graduate experience and/or training in obstetrics. Candidates must be registered medical practitioners. The duties of the office consist of work in Domiciliary Midwifery and Child Welfare Service and such other duties as the Medical Officer of Health may allocate. Opportunities may be given for postgraduate training in maternal and child health. Applicants must disclose whether they are related to any Councillor or Senior Officer of the Council. Canvassing will be treated as evidence that the applicant's merits alone are insufficient to justify appointment.

Write to the Crown Agents, 4, Millbank, London, S.W.1, enclosing at least 2 copies of recent testimonials. State age, name in block letters, full qualifications and experience and quote M3A/43058/LD.

LAGOS TOWN COUNCIL, Nigeria. Assistant Medical OFFICER OF HEALTH required. Salary £804 rising to £1650 plus £100 a year staff pay and inducement allowance of £240 rising to £300 a year. Point of entry depends on the applicant's qualifications and experience. Free passages for Officer and wife. Assistance towards cost of children's passages and grant up to £150 annually for their maintenance in United Kingdom. Liberal leave on full salary after each tour of 12/24 months duration. Outfit allowance up to £60 in certain cases. Candidates must be registered medical practitioners. The duties of the office consist mainly of the control of infectious diseases, health education, school health work and such other duties as the Medical Officer of Health may allocate. Opportunities may be provided for postgraduate training in public health work. Applicants must disclose whether they are related to any Councillor or Senior Officer of the Council. Canvassing will be treated as evidence that the applicant's merits alone are insufficient to justify appointment.

Write to the Crown Agents, 4, Millbank, London, S.W.1, enclosing at least 2 copies of recent testimonials. State age, name in block letters, full qualifications and experience and quote M3A/34355/LD.

LANCASHIRE COUNTY COUNCIL. Applications invited from registered medical practitioners for appointment of ASSISTANT DIVISIONAL MEDICAL OFFICERS in the Boroughs of Heywood and Leigh, near Manchester, and areas adjacent to Oldham. Possession of D.P.H. desirable. Salary £975–£1375 p.a. Travelling and subsistence allowances where applicable.

Application forms and further particulars from County Medical Officer, Serial 467, East Cliff County Offices, Preston.

STAFFORDSHIRE COUNTY COUNCIL. Applications are invited from fully qualified medical practitioners for the appointment of ASSISTANT COUNTY MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER, the main duty of which will be the administration of dental anæsthetics, so that previous experience in that connection will be an advantage. Other duties will be prescribed by the County Medical Officer of Health as and when required. The salary scale is £975–£50–£1375, and previous Local Authority service may be taken into consideration when deciding the commencing rate. The use of a car will be necessary and allowances will be paid in accordance with the County Council scale. The appointment will be terminable by 3 months notice in writing on either side and superannuable, and the selected candidate will be required to pass a medical examination and produce his or her birth certificate.

Forms of application and further information can be obtained from the County Medical Officer of Health, County Buildings, Stafford, to whom applications should be sent by not later than 4th February, 1956.

T. H. EVANS, Clerk of the County Council.

County Buildings, Stafford, 5th January, 1956.

WORCESTERSHIRE COUNTY COUNCIL. Deputy MEDICAL OFFICER OF HEALTH, Borough of Oldbury, AND DEPUTY DIVISIONAL MEDICAL OFFICER OF HEALTH, Oldbury. Applications invited from registered medical practitioners with D.P.H. Salary £1115 16s. 8d.–£1497 1s. 8d. (Deputy Divisional Medical Officer's post on scale £732 10s.–£37 10s. (7)–£48 15s.–£1043 15s., and Deputy Medical Officer of Health post on scale £383 6s. 8d.–£17 10s. (4)–£453 6s. 8d.).

Application forms obtainable from County Medical Officer, County Buildings, Worcester, to be returned by 31st January, 1956 (F.223).

THE MEDICAL SERVICE OF THE ROYAL NAVY

VACANCIES FOR MEDICAL OFFICERS

Candidates are invited for Short Service Commissions of 3 years, on termination of which a gratuity of £450 (tax free) is payable. (Longer Short Service Commissions can be obtained, as an alternative of 4 years duration with gratuity of £600 (tax free).) Ample opportunity is granted for transfer to Permanent Commissions on completion of 1 year's total service. Officers so transferred are paid instead a grant of £1500 (taxable).

All entrants are required to be British subjects whose parents are British subjects, to be medically fit, and to pass an interview.

Full particulars from the Admiralty Medical Department, Queen Anne's Mansions, St. James's Park, London, S.W.1.

WEST HARTLEPOOL. COUNTY BOROUGH OF WEST HARTLEPOOL. Applications are invited for the appointment of DEPUTY MEDICAL OFFICER OF HEALTH AND DEPUTY PRINCIPAL SCHOOL MEDICAL OFFICER from registered medical practitioners possessing the Diploma in Public Health or similar qualifications. Candidates should have experience in the ascertainment of educationally subnormal pupils and preferably be approved by the Ministry of Education for this purpose. The officer appointed will be required to carry out such statutory duties as shall be allocated to him from time to time by the Medical Officer of Health.

The salary scale applicable to the post is £1150 p.a., rising by yearly increments of £52 10s. to a maximum of £1360 p.a. Previous service with a local authority will be taken into account in fixing the commencing salary within this scale. The post is superannuable and subject to 2 months notice in writing on either side. The successful applicant will be required to pass a medical examination.

Applications, giving full details of the applicant's age, experience and qualifications, together with names and addresses of 3 referees, should be sent to reach the Medical Officer of Health, Durham House, Victoria-road, West Hartlepool, not later than Friday, 27th January, 1956.

ERIC J. WAGGOTT, Town Clerk.
Municipal Buildings, West Hartlepool, 6th January, 1956.

General Practice

For an Executive Council post (England and Wales) apply on form E.C.16A *obtainable from the council. Mark envelope "Vacancy"*

BIRMINGHAM, SPARKBROOK. Applications invited for VACANCY (urban) due to resignation. List approximately 1700. Residence/surgery may be available. Apply on E.C.16A not later than 28th January, 1956, to—

K. F. G. DAY, Clerk of Birmingham Executive Council.
Sutton New-road, Erdington, Birmingham, 23.

DEWSBURY, YORKSHIRE. Applications are invited for VACANCY (urban) due to death. List at present approximately 1625 (all prescribing). Intermediate area. Residence and surgery for sale—situation near town centre. Old established practice. Apply on Form E.C.16A not later than 18th January, 1956, to—

R. VOLLANS, Clerk of the Dewsbury Executive Council.
Church House, Church-street, Dewsbury (Telephone No. 2191).

ILFORD, ESSEX. Applications invited for retirement VACANCY (urban—intermediate area). List at present approximately 2150. Residence and surgery not available. Apply on Form E.C.16A before 26th January, 1956, to—

E. BERGDAHL, Clerk of the Council.
Essex Executive Council, 131/3, Fillebrook-road, Leytonstone, E.11.

LIVERPOOL—WALTON. Applications invited for medical practice VACANCY (urban)—Doctor resigning. List approximately 1300. Surgery premises will be available for purchase. Apply on Form E.C.16A to the undersigned, not later than Saturday, 28th January, 1956.

J. G. DONCASTER, Clerk of the Liverpool Executive Council.
36, Princes-road, Liverpool, 8.

EXECUTIVE COUNCIL FOR THE COUNTY OF INVERNESS. National Health Service (Scotland) Act, 1947. General Medical Services. Applications are invited from registered medical practitioners to fill a VACANCY in Arisaig, Inverness-shire. The number on the list is 593. There is a substantial mileage payment. A house is available.

Applications, stating age, qualifications and experience, together with copies of recent testimonials, should be sent, not later than 14 days from the date of this advertisement, to the undersigned, from whom particulars can be obtained.

MAY MCLEAN, Clerk,
Executive Council for the County of Inverness.
17, Queensgate, Inverness.

Hospital Services : Non-Medical Appointments

BISHOP'S STORTFORD, HERTFORDSHIRE. PATHO-LOGICAL LABORATORY, HAYMEADS HOSPITAL. CHIEF TECHNICIAN required for this Area Laboratory. Candidates should have F.I.M.L.T. and wide experience of practical laboratory technology. Further details on application.

Applications, giving qualifications, nationality, age and experience, with copies of recent testimonials or names of 2 referees, to Hospital Secretary.

LLANDOUGH HOSPITAL, Penarth, Glamorganshire. Hospital Biochemist. Applications are invited for the post of BIOCHEMIST (in charge of Biochemistry Department) at above Hospital which is 1 of the 2 main teaching hospitals of the United Cardiff Hospitals. Applicants should have had at least 2 years experience in a Hospital Laboratory. Salary according to Whitley Council P.T.A. Circular 34 in the scale £650–£845 p.a.

Applications should be addressed to the Secretary, United Cardiff Hospitals, Royal Infirmary, Cardiff, not later than Thursday, 19th January, 1956.

Miscellaneous

To non-professional posts the Notification of Vacancies Order 1952 applies

Medical Officer required for Middle East by large Oil Company; preference for those with overseas experience and some knowledge of tropical work. Age about 35 and preferably single. Emoluments total over £1800 p.a.; paid home leave after 2 years; pension fund.—Replies quoting No. 379 to: Box No. 9539, c/o CHARLES BARKER & SONS LTD., 31, Budge-row, London, E.C.4.

Applications are invited from registered medical practi-tioners between 28 and 35 years for the full-time post of an Assistant Medical Officer at the head office of Unilever Limited in London. The successful candidate will be required to assist in the health supervision of a large clerical staff, a considerable proportion of whom are adolescents. The work will also include the medical examination of candidates for home and overseas appointments, and the re-examination of employees and their families on home leave from both temperate and tropical climates. The post will also involve advising on problems concerning the health and well-being of the working community. Candidates should have a good standard of clinical medicine combined with an interest in preventive and industrial medicine. Experience in general practice, and tropical medicine would be an advantage. Salary will be in accordance with experience, qualifications, and age, and will be not less than £1400 p.a.

The list of those invited to attend for interview will be made out from the letters of application. Candidates are therefore asked to give full details of their training and experience, including their reasons for wishing to make a career in industrial medicine. The names of 3 persons to whom reference may be made should also be included. Applications should be submitted not later than 27th January, 1956, to the Principal Medical Officer, Unilever House, Blackfriars, London, E.C.4.

Catholic Mission Hospital, Nigeria. 2 Doctors needed urgently, 1 for acute general hospital, 1 for leper colony.—For details apply: Secretary, DAMIEN MEDICO-MISSIONARY SOCIETY, 31, Fitzwilliam-square, Dublin.

Liverpool. Partner required, one-third share offered in practice of approximately 5500 units after Assistantship of 3/6 months to suitable applicant, car owner, live out. Salary during Assistantship £1250 p.a.—Full particulars, Address, No. 195, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Wimpole-street: Large first-floor consulting-room with separate secretarial accommodation. £250 p.a.—C. E. BEDFORD & Co., 10, Wigmore-street, W.1.

Part-time Consulting-rooms to let in the Harley-street district. Rents from £60 per half-day session or with plate £75 p.a.—Apply: ELLIOTT, SON & BOYTON, 86/87, Wimpole-street, London, W.1 (WELbeck 8367).

Optician desires part-time consulting-room at Doctor's premises. London area.—SHEINMAN, 140, Petherton-road, N.5.

Consultant Radiologist wishes to hire X-ray equipment and rooms or enter partnership in Wimpole-street area. Capital available.—Address, No. 196, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Derbyshire-Cheshire border. For Sale, delightfully situated large residence, suitable for convalescent home, handicapped children, &c. 4/5 Ent. rooms, kitchen with "Esse" and "Paul" stainless sink. 8/10 bedrooms, 4 bathrooms, &c., including self-contained flat. Central heating. Garages and outbuildings. 8 acres. Overhauled and redecorated. £4500 (50% Mortgage available).—W. H. ROBINSON & Co., 79, Mosley-street, Manchester, 2 (Central 2281).

Hypnotism. Will all Doctors interested in this subject for Medical purposes please write to the Secretary, British Society of Medical Hypnotists, 126, Harley-street, W.1.

Reconditioned Electrocardiograph available in perfect order from Manufacturer. Reasonable offers invited.—Address, No. 197, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Live Leeches always in stock.—Apply: R. Brooks & Co., Lucullus House, 4, Barbican, London, E.C.1.

Typewriting and Duplicating. First-class work at moder-ate prices by experienced medical typists. Electric machines.—SYBIL RANG, 21, Heath-street, Hampstead, London, N.W.3 (HAM. 5329/0504).

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimen of urine and £1 1s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Applicants for posts requiring testimonials copied or duplicated should communicate with MANTON SECRETARIAL SERVICE LTD., 98, Victoria-street, S.W.1 (Phone: VICtoria 0141), who are specialists in this kind of work.

3 nearly new wheel-chairs, collapsible, for sale.—For appointment: ring HYD. 3257 between 9.30 A.M. and 2 P.M.

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STABLE PRICES

an announcement

Following the public-spirited lead set by the Cement manufacturers and Wellcome Foundation, we have decided not to increase the prices of any of our products marketed in the United Kingdom during the next six months.

In making this announcement, we are re-affirming a long-standing policy of keeping our prices down and reducing them at every opportunity. The prices of many of our preparations have been reduced several times over the last few years, despite the rising cost of fuel, raw materials, and wages. This policy has contributed to the remarkable record of price stability in the pharmaceutical industry; the wholesale prices of drugs and pharmaceutical preparations are now only 4.1% higher than in June 1949—compared with a rise of over 30% in the general level of all wholesale prices.

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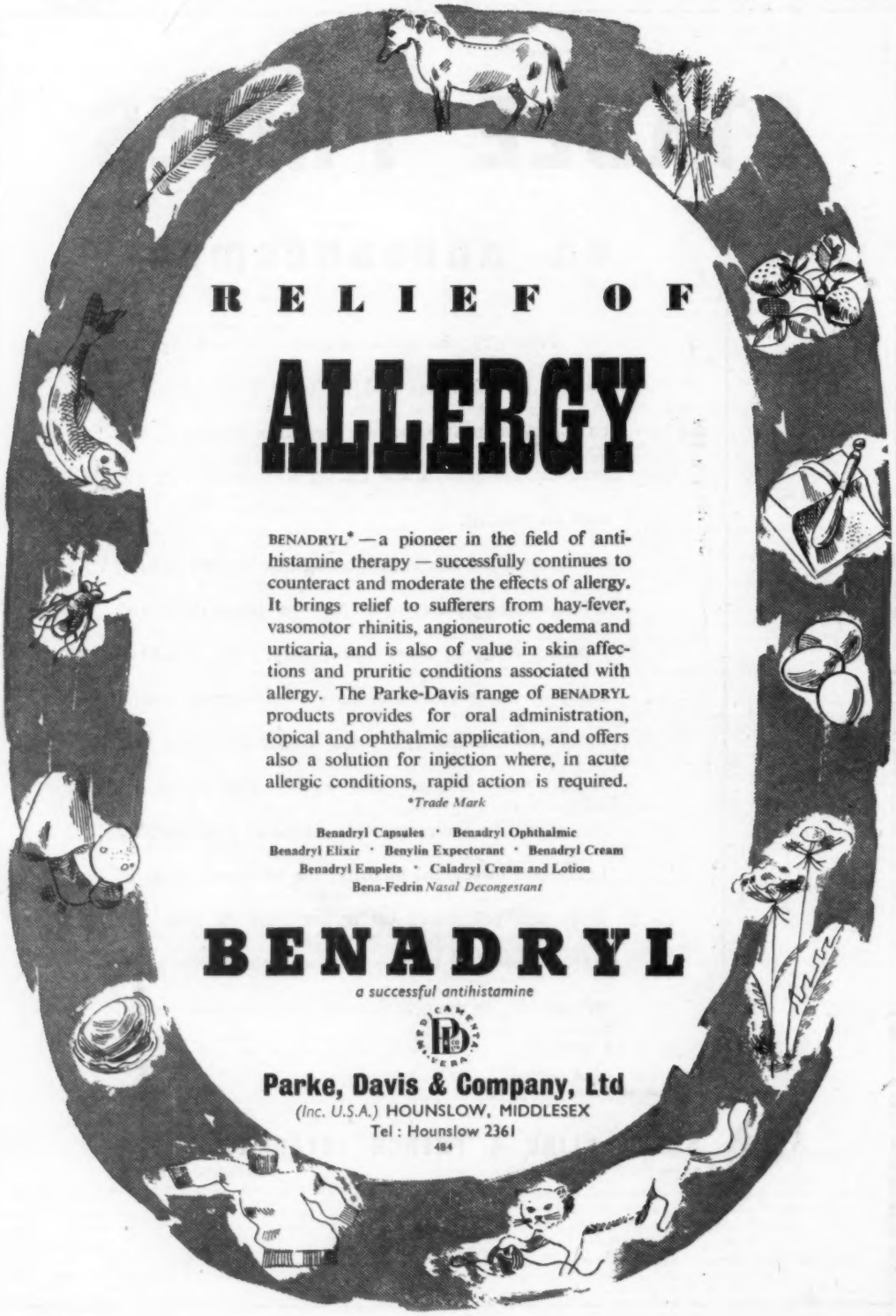

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